DOCUMENT RESUME

ED 304 588 CE 052 132

AUTHOR Mills, Steven; And Others
TITLE Welcome to Lotus 1-2-3 Advanced. Learning Activity Packets.
INSTITUTION Oklahoma State Dept. of Vocational and Technical Education, Stillwater. Curriculum and Instructional Materials Center.
PUB DATE 89
NOTE 121p.; For a related document, see CE 052 131.
AVAILABLE FROM Curriculum and Instructional Materials Center, Oklahoma Department of Vocational and Technical Education, 1500 West Seventh Avenue, Stillwater, OK 74074-4364 (Order No. BO-3024).
PUB TYPE Guides - Classroom Use - Guides (For Teachers) (052)

EDRS PRICE MF01/PC05 Plus Postage.
DESCRIPTORS Business Education; *Computer Software; *Learning Activities; Lesson Plans; Microcomputers; Postsecondary Education; Secondary Education; Units of Study
IDENTIFIERS *Lotus 1 2 3; *Spreadsheets

ABSTRACT

This learning activity packet (LAP) contains five self-paced study lessons that allow students to study advanced concepts of Lotus 1-2-3 at their own pace. The lessons used in the LAP are organized in the following way: lesson name, lesson number, objectives, completion standard, performance standard, required materials, unit test, and exercises. Most lessons are presented in a "read and do" format. The lessons have been prepared for use with IBM Personal Computers. The five lessons cover the following topics: advanced worksheet and range command skills; advanced copy and move command skills; advanced file and print command skills; table lookup and special functions; and keyboard macros. The packet also contains unit tests with answer keys and answer keys for the lesson exercises. (KC)

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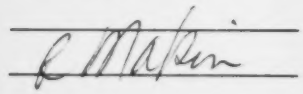

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LEARNING ACTIVITY PACKETS

Developed by
Curriculum and Instructional Materials Center
Oklahoma State Department of Vocational and Technical Education
Dr. Roy Peters, Jr., Director
Oklahoma State Board of Vocational and Technical Education
Dr. Gerald Hoeltzel, Chairman

ACKNOWLEDGEMENTS

The development of the *Lotus 1-2-3 © Advanced Learning Activities Packet* is credited to Steven Mills, Eddie Palovik and Gayle Kearns. It was their hard work and effort that made the LAPs a success.

A great appreciation is extended to Greg Pierce, CIMC Coordinator and Sheila Stone, Curriculum Development Coordinator for their support during the development of the Learning Activity Packets. A special thanks goes to Terrell Ogilvie, Technical Writer, for his contribution toward the development of the LAPs.

A special thanks goes to the Business and Office instructors who participated in the training workshops and helped validate and refine the LAPs.

PREFACE

WHAT ARE LAPS?

Learning Activity Packets (LAPs) are self-paced study lessons that allow the student to proceed along a course of study at his or her own pace. The student is allowed to progress to the next lesson in the unit only after a certain level of competency and understanding is achieved.

The advantage to the student of using LAPs for certain areas of study is obvious in that it allows the student to progress at his or her own pace. Some students learn faster than others and LAPs takes this fact into consideration by allowing all to learn at their own rate.

The advantage to the instructor of using LAPs for certain areas of study is that the instructor becomes available to be your lab partner. This allows more individual attention to each student's learning needs.

ORGANIZATION OF LESSONS

The lessons used in the LAPs are organized in the following way:

LESSON NAME	This is the name of the LAP within the instructional unit.
LESSON NO.	Each lesson is numbered to maintain the right sequence of instruction.
OBJECTIVES	A description of the major points or concepts which will be taught in a lesson as well as a description of what the student should be able to perform upon completion of the unit.
COMPLETION STANDARD	This is a suggested maximum amount of time the student will need in order to complete the lesson. This information is available in the Teachers Manual and Index.
PERFORMANCE STANDARD	This score must be achieved on the Unit Test and Exercises before progressing to the next unit. These LAPs will always use a standard of 70% for each lesson.
REQUIRED MATERIALS	This is a list of all materials the student will need in order to complete the lesson.

UNIT TEST — The Unit Test is used to measure the theory competency of the student in regard to the material presented in the LAP.

EXERCISES — An application of the operations is assigned to measure the laboratory competency of the student in regard to the material presented in the LAP.

READ AND DO

Most lessons are presented in a READ and DO format. Some information is presented in a READ paragraph. A response to the information just presented is made in the form of a DO paragraph. However, sometimes information is presented with no requisite DO responses.

COMPUTER HARDWARE CONFIGURATION

These lessons have been prepared for use with the IBM Personal Computer. Since the computer you use may be equipped differently from other IBM-PC's, you should take note as to the configuration of your computer. Many instructions may refer to a particular disk configuration or a particular kind of printer. You should be aware of the particular configuration for the microcomputer you are using.

SOFTWARE VERSION

The information presented in the lessons generally reflect the latest version of the software currently available on the consumer market.

LEARNING PROCEDURES

This is the step-by-step procedure the student should follow in order to complete the lesson properly. Generally, the learning procedure for each lesson should follow this schedule:

1. READ the Objectives for the lesson. Be certain that you have selected the correct lesson and have the required materials.
2. READ and DO the information and operations presented in the lesson.
3. DO the Exercises at the end of the lesson and return to the instructor for scoring.
4. STUDY the information presented in the lesson.
5. DO the Unit Test and return to the instructor for scoring.
6. If you meet the performance standard, MOVE to the next lesson in the sequence.

LOTUS 1-2-3
Advanced Course

NO.	LESSON NAME	PRE REQ.	COMPLETE. STANDARD
12	Advanced Worksheet and Range Command Skills	11	9 hrs.
13	Advanced Copy and Move Command Skills	12	6 hrs.
14	Advanced File and Print Command Skills	13	6 hrs.
15	Table Lookup and Special Functions	14	9 hrs.
16	Keyboard Macros	15	6 hrs.
	TOTAL TRAINING TIME FOR COURSE		36 hrs.

LESSON 12

ADVANCED WORKSHEET AND RANGE COMMAND SKILLS

OBJECTIVES:

* Describe /Worksheet commands
* Illustrate the /Worksheet Command Menu
* Use /Worksheet Global settings
* Use /Worksheet Status, /Worksheet Titles, and /Worksheet Window commands
* Describe /Range commands
* Illustrate the /Range Command Menu
* Use /Range Name commands
* Use /Range Unprotect, Input, and Justify commands

REQUIRED MATERIALS:

* Paper and pen or pencil
* A DOS diskette
* Lotus 1-2-3 System Disk
* A practice disk
* IBM-PC with 1 or 2 diskette drives or hard disk and printer

READ: WORKSHEET COMMANDS

The /Worksheet commands control various operations in 1-2-3 that affect general usage of a worksheet. These commands are used at various times:

Starting Out. When you install 1-2-3 on your computer, you can use /Worksheet commands to tell 1-2-3 about your computer's hardware components and configuration. From time to time you may need to inform 1-2-3 of any changes you make in the computer hardware configuration.

At the Beginning of a Session. A set of /Worksheet commands are useful at the beginning of a 1-2-3 processing session to determine the overall appearance of the worksheet--column widths and display formats. Other /Worksheet commands determine the way in which 1-2-3 calculates the formulas you enter into the worksheet.

During a 1-2-3 Processing Session. Other /Worksheet commands are most useful in the middle of a session. They can make large-scale changes to the worksheet's contents such as erasing the entire worksheet or inserting empty rows and columns. And /Worksheet commands change the way 1-2-3 uses the display screen, allowing you to view two widely-separated parts of the worksheet at the same time.

READ: WORKSHEET COMMAND MENU

1-2-3 has two types of Worksheet commands--those that affect the entire worksheet and those that affect parts of the worksheet.

The commands that affect the entire worksheet are called /Worksheet Global commands. These commands let you set the numeric format, the label-prefix alignment, the column width, the protection status for the entire worksheet, and certain other settings.

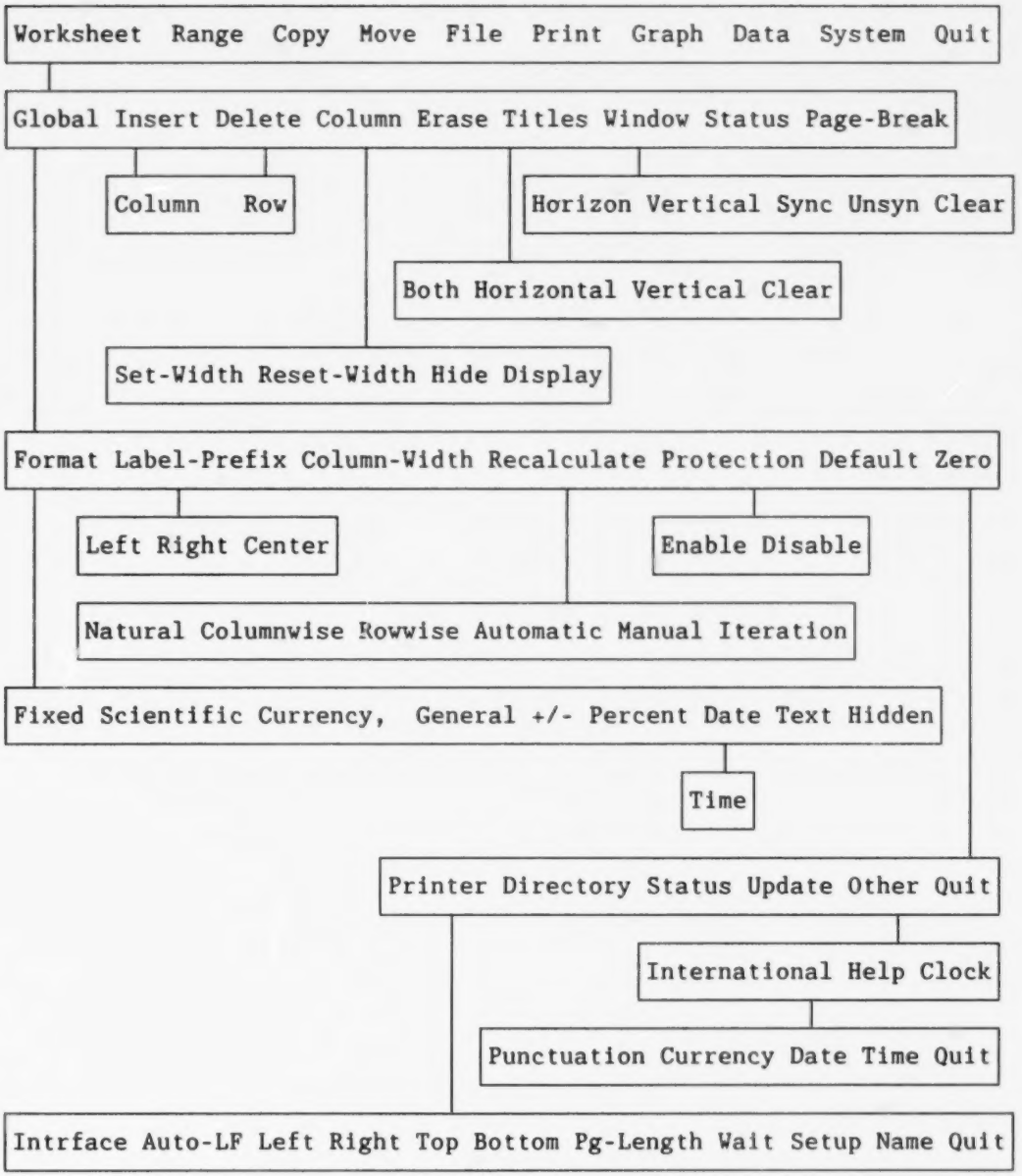
Range commands and Worksheet commands that affect only a portion of the worksheet will override these /Worksheet Global settings.

Worksheet commands that affect parts of the worksheet let you insert or delete rows and columns, change the widths of specified columns, prevent columns from appearing on the screen, freeze rows or columns as titles, see nonadjacent parts of the worksheet simultaneously, and tell 1-2-3 to begin a new page when printing.

Some of these commands have been presented in previous units. The remainder of these /Worksheet commands will be presented in this unit.

The diagram shown on the following page illustrates the organization of the /Worksheet command structure that is used by 1-2-3:

WORKSHEET COMMAND MENU


Worksheet Range Copy Move File Print Graph Data System Quit
Global Insert Delete Column Erase Titles Window Status Page-Break
Column Row
Horizon Vertical Sync Unsyn Clear
Both Horizontal Vertical Clear
Set-Width Reset-Width Hide Display
Format Label-Prefix Column-Width Recalculate Protection Default Zero
Left Right Center
Enable Disable
Natural Columnwise Rowwise Automatic Manual Iteration
Fixed Scientific Currency, General +/- Percent Date Text Hidden
Time
Printer Directory Status Update Other Quit
International Help Clock
Punctuation Currency Date Time Quit
Intrface Auto-LF Left Right Top Bottom Pg-Length Wait Setup Name Quit

READ: /WORKSHEET GLOBAL SETTINGS

Although it has been mentioned in previous units, we will say again that the /Worksheet Global commands control five overall aspects of worksheet appearance:

* Global Numeric Display Format
* Global Label-Prefix character (label alignment)
* Global Column Widths
* Recalculation Procedure
* Cell protection

When you start creating a new worksheet, it is not necessary to issue /Worksheet Global commands unless you want something other than the initial worksheet settings. When 1-2-3 begins execution, and whenever you issue a /Worksheet Erase command, the initial global settings listed in the following table are established:

Global Setting	Initial Value	Other Possible Values
Numeric Display Format	General	Fixed, Currency, Comma, Percent, Scientific, Date, +/-, Text
Label Alignment	Left-Aligned	Right-Aligned, Centered
Column Width	9 characters	1..240 characters

DO: STARTING 1-2-3

Start 1-2-3 using the appropriate Lotus 1-2-3 Start-Up Procedure.

DO: LOAD THE WORKSHEET

We are going to use a previously completed worksheet to demonstrate the use of /Worksheet commands. Load the worksheet, SALES, using the /File Retrieve command.

DO: /WORKSHEET GLOBAL RECALCULATION COMMAND

Look at the illustration of the Worksheet Command Menu near the beginning of this lesson and trace the path to the /Worksheet Global Recalculation command.

The /Worksheet Global Recalculation command controls when, in what order, and how many times the formulas in the worksheet are recalculated.

To control when the formulas in the worksheet are recalculated, change between Automatic and Manual.

1. Press the / to invoke the 1-2-3 command menu.

2. Move the pointer to Worksheet and press **<Return>**.

3. Move the pointer to Global and press **<Return>**.

4. Move the pointer to Recalculate and press **<Return>**.

   The initial value of Recalculation is Automatic. Normally, you change from the initial Automatic to Manual when recalculation takes a noticeable length of time because of the size and complexity of the worksheet.

5. Press the F9 [Calc] key. For Manual Recalculation to take place you must press the F9 [Calc] key to make 1-2-3 recalculate all formulas.

   The CALC indicator will appear in the bottom right-hand corner when you are using Manual Recalculation, when you have made new entries, and when the worksheet has not been recalculated. Pressing F9 to recalculate the worksheet will release the CALC indicator.

6. Now reset Recalculation to Automatic by selecting /Worksheet Global Recalculate Automatic.

READ: RECALCULATION ORDER

To control the order in which the formulas are recalculated, choose among Natural, Columnwise, and Rowwise. The initial value of the recalculation order is Natural. For most purposes Natural is best. Change to Columnwise or Rowwise orders only when you have constructed a worksheet in which you need to explicitly control the recalculation order.

In performing formula recalculation, 1-2-3 respects the interrelationships among all cells. It does not recalculate a formula until it has already processed all other formulas it depends on. Although 1-2-3 is very clever about keeping track of the interrelationships among cell formulas, it can't prevent you from devising some paradoxical situations. When you devise a formula in which its value indirectly depends on itself, it is called a circular reference. Whenever 1-2-3 detects a circular reference in a worksheet using Natural order, it displays a CIRC indicator at the lower right corner of the screen. If this occurs, analyze your formulas for one in which its value is indirectly or directly dependent on itself.

To control how many times 1-2-3 cycles through all formulas each time it recalculates, choose Iteration and type the number of recalculations you wish. At least one recalculation is automatically done.

DO: /WORKSHEET GLOBAL PROTECTION

Look at the illustration of the Worksheet Command Menu near the beginning of this lesson and trace the path to the /Worksheet Global Protection command.

The Worksheet Global Protection command controls access to cells by turning the protection facility on and off. Generally, the protection facility is used when creating a worksheet template for use by others which contains cells that you don't want changed:

1. Press the / to invoke the 1-2-3 command menu.

2. Move the pointer to Worksheet and press **<Return>**.

3. Move the pointer to Global and press **<Return>**.

4. Move the pointer to Protection and press **<Return>**.

5. Move the pointer to Enable and press **<Return>**. Now move the pointer to cell B5 and attempt to change the contents from 2000 to 3000.

   Notice that whenever you try to store the new cell contents, the computer beeps and an error message, "Protected cell" is displayed in the lower left-hand corner.

6. Now disable global cell protection by issuing the command, /WGPD. Now see if you can change the contents of cell B5 from 2000 to 3000. You should be able to if you correctly disabled the global cell protection facility.

DO: /WORKSHEET GLOBAL DEFAULT

Look at the illustration of the Worksheet Command Menu near the beginning of this lesson and trace the path to the /Worksheet Global Default command.

The Worksheet Global Default command tells 1-2-3 what kind of printer and interface your computer has and what disk drive and directory (or sub-directory) to initially use for saving and retrieving files.

Whenever you start 1-2-3, it reads a start-up configuration file, called 123.CNF, from the 1-2-3 System Disk.

Reading this file causes 1-2-3 to make certain assumptions about the equipment you are using and how you want your print-outs to look. These assumptions are called the default configuration and are listed in the following sample display:

```
Printer:                          International:
 Interface..... Parallel 1        Punctuation..... A
 Auto Line-Feed.. No               Point Dot
                                   Argument Comma
 Margins                           Thousands Comma
    Left 4      Top 2
    Right 76  Bottom 2          Currency........ $ (Prefix)
                                Date format D4..A (MM/DD/YY)
    Pagelength......66          Time format D8..A (HH:MM:SS)
    Wait.............. No
    Setup string.....
    Name.............. IBM Quietwriter or Graphics Printer

 Directory at startup:  B:\

 Help access method:  Removable

 Clock on screen:  Standard
```

You may change this configuration using the /Worksheet Global Default Printer, /Worksheet Global Default Directory, and /Worksheet Global Default Update commands.

We are just going to display the current default configuration on the screen since your 1-2-3 disk has probably already been installed for your computer equipment:

1. Press the / to invoke the 1-2-3 command menu.

2. Move the pointer to Worksheet and press **<Return>**.

3. Move the pointer to Global and press **<Return>**.

4. Move the pointer to Default and press **<Return>**.

5. Move the pointer to Status and press **<Return>**.

   The default configuration is displayed on the screen. After viewing the information press any key to continue.

6. Move the pointer to Quit to end the Worksheet Global Default Status operation and clear the 1-2-3 Command Menu.

DO: /WORKSHEET STATUS COMMAND

Look at the illustration of the Worksheet Command Menu near the beginning of this lesson and trace the path to the /Worksheet Status command.

In contrast to the Worksheet Global Default Status command, the Worksheet Status command displays available memory and only the global settings.

1. Press the / to invoke the 1-2-3 command menu.

2. Move the pointer to Worksheet and press **<Return>**.

3. Move the pointer to Status and press **<Return>**.

   Here is a typical display and then a table identifying the Status settings:

```
Available Memory:
  Conventional..... 445100 of 446304 Bytes (99%)
  Expanded......... (None)

Math Co-processor:  (None)

Recalculation:
  Method........... Automatic
  Order............ Natural
  Iterations....... 1

Circular Reference: (None)

Cell Display:
  Format........... (,2)
  Label-Prefix..... '
  Column-Width..... 9
  Zero Suppression. Off

Global Protection:  Off
```

4. After viewing the information, return to READY mode by pressing any key.

DO: /WORKSHEET TITLES COMMAND

Look at the illustration of the Worksheet Command Menu near the beginning of this lesson and trace the path to the /Worksheet Titles command.

The Worksheet Titles command freezes specified rows or columns along the top left edge of the screen so that they are always visible. This is useful if you want some columns or rows to stay on the screen while the rest of the worksheet window is allowed to scroll.

Let's freeze the top three rows of the worksheet as titles:

1. Move the pointer to cell B4. Since we are setting titles horizontally, it is important to remember when using the /Worksheet Titles Horizontal command that all the rows above the pointer will be frozen as titles.

   When setting vertical titles, all columns to the left of the pointer will be frozen as titles.

2. Press the / to invoke the 1-2-3 command menu.

3. Move the pointer to Worksheet and press **<Return>**.

4. Move the pointer to Titles and press **<Return>**.

5. Move the pointer to Horizontal and press **<Return>**.

6. Now move the pointer down the screen until the worksheet window is scrolled upward. Notice that the titles remain in the worksheet window.

7. To clear the titles type /WTC. Move the pointer up and down the worksheet window and you will notice that the title area has now been unfrozen or cleared.

DO: /WORKSHEET WINDOW COMMAND

Look at the illustration of the Worksheet Command Menu near the beginning of this lesson and trace the path to the /Worksheet Window command.

The Worksheet Window command controls the split-screen facility--the division of the screen into two horizontal or vertical worksheet windows. This is most useful in viewing two distant parts of the worksheet on the screen at the same time.

Let's divide the current worksheet into two vertical windows:

1. Move the pointer to cell D1. When creating a vertical window, you should remember that the first window will be created just left of the pointer and the pointer will be located at the right edge of the first window.

When creating a horizontal window, you should remember that the top window will be created just above the pointer and the pointer will be located at the bottom of the top window.

2. Press the / to invoke the 1-2-3 command menu.

3. Move the pointer to Worksheet and press **<Return>**.

4. Move the pointer to Window and press **<Return>**.

5. Move the pointer to Vertical and press **<Return>**.

   Two vertical windows are now displayed on the screen. Notice where the pointer is positioned and where the worksheet was divided.

6. Now move the pointer down the worksheet. Notice that as you move off the bottom edge of the worksheet that both windows are scrolled upward together or synchronized.

7. Now type /Worksheet Window Unsync. Now move the pointer down the worksheet. Notice that this time only one window scrolls and the other remains stationary. This is unsynchronized windows.

8. To jump to the other window press F6. Press F6 again to return to the first window.

9. To clear the two windows and just have one window again type /WWC.

10. Now see if you can create unsynchronized horizontal windows. Use F6 to jump from window to window. Then clear the windows.

READ: RANGE COMMAND MENU

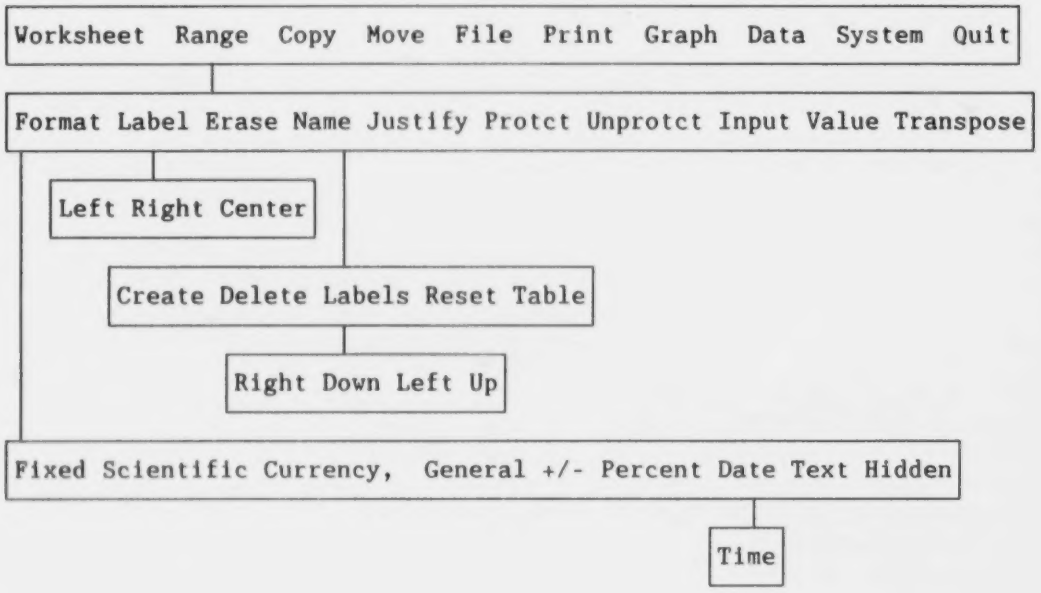
The Range commands manipulate ranges of cells. A range is any rectangular block of cells. It can be a single cell, a single row, a single column, or parts of several rows and columns.

With the /Range commands, you can change the numeric format of a range to control how numbers appear, align the labels in a range, erase the contents of a range, transpose a range by switching from a vertical layout (columns) to a horizontal one (rows), and vice versa. You can also convert the formulas in a range to their values, protect or unprotect a range to prevent or allow changes to entries, rearrange "paragraphs" of long labels, restrict the movement of the cell pointer to a specific range, name a range, and change or delete a range name.

Some of these commands have been presented in previous units. The remainder of these /Range commands will be presented in this lesson.

The following diagram illustrates the organization of the /Range command structure that is used by 1-2-3:

RANGE COMMAND MENU


Worksheet Range Copy Move File Print Graph Data System Quit
Format Label Erase Name Justify Protct Unprotct Input Value Transpose
Left Right Center
Create Delete Labels Reset Table
Right Down Left Up
Fixed Scientific Currency, General +/- Percent Date Text Hidden
Time

DO: LOAD THE WORKSHEET

We are going to use a previously completed worksheet to demonstrate the use of /Range commands. Load the worksheet, BIRTHDAY, using the /File Retrieve command.

DO: /RANGE NAME COMMANDS

Look at the illustration of the Range Command Menu and trace the path to the /Range Name command.

Range names are useful when you frequently refer to the same range of data. /Range Name commands name a range or redefine to which cells an existing range name refers.

/Range Name commands also name an adjacent cell, remove specific range names, delete all range names from the worksheet, and displays all the range names in the worksheet.

1. To create a range name, move the pointer to cell A10 and press the / to invoke the 1-2-3 command menu.

2. Move the pointer to Range and press **<Return>**.

3. Move the pointer to Name and press **<Return>**.

4. Move the pointer to Create and press **<Return>**.

5. At the prompt to enter a range name type, **TESTLABEL** and press **<Return>**.

6. Expand the pointer to C15 and press **<Return>**.

   You have now assigned the name, TESTLABEL, to the range A10..C15.

7. Select the /Range Name Create command again. Move the pointer to the range name, TESTLABEL, and press **<Return>**.

   Notice the range A10..C15 is highlighted. This range has been named and may now be referred to by the name, TESTLABEL, rather than A10..C15.

   Now press **<Return>** to release the command menu.

8. Now, to create several range names from adjacent cells, move the pointer to E2 and type, **"ENTER YOUR BIRTH DATE:**.

9. Move the pointer to E3 and type, **"MONTH**.

10. Move the pointer to F3 and type, **"DAY**.

11. Move the pointer to G3 and type, **"YEAR** and press **<Return>**.

    Your worksheet should look like the following:

G3: "YEAR

	A	B	C	D	E	F	G
1	**BIRTHDAY ANALYSIS WORKSHEET**						
2					**ENTER YOUR BIRTH DATE:**		
3	**Today's Date:**		**[10-Jun-86]**		**MONTH**	**DAY**	**YEAR**
4	**My Birthday:**		**13-Oct-53**				
5							
6	**Age in Years:**		**32**				
7	**Age in Months:**		**380**				
8	**Age in Days:**		**11928**				
9							
10							

12. Move the pointer to E3 and press the / to invoke the 1-2-3 command menu.

13. Move the pointer to Range and press **<Return>**.

14. Move the pointer to Name and press **<Return>**.

15. Move the pointer to Labels and press **<Return>**.

16. Move the pointer to Down and press **<Return>**.

17. Expand the pointer to G4 and press **<Return>**.

18. Select the /Range Name Create command again. Notice the range names, MONTH, DAY, and YEAR, are now included in your list of range names.

19. Move the pointer to the range name, MONTH, and press **<Return>**.

    Notice the adjacent cell down from the label, E4, has been highlighted as the range for the range name, MONTH. F4 is the range for DAY and G4 is the range for YEAR.

    Now press **<Return>** to release the command menu.

    These range names can be used in formulas in place of the range specification.

20. Move the pointer to C4 and type the formula:

    @DATE(YEAR,MONTH,DAY)

    and press **<Return>**.

21. Move the pointer to E4 and type the numerical month of your birthday, move to F4 and type the numerical day of your birthday, move to G4 and type the numerical year (two digits) of your birthday, and then press **<Return>**.

    Notice the Birthday Analysis Worksheet is recalculated using the information you input to the range names.

DO: /RANGE PROTECT AND UNPROTECT COMMANDS

Look at the illustration of the Range Command Menu and trace the path to the /Range Protect and /Range Unprotect commands.

/Range Protect prevents changes and deletions to a range of cells when global protection for the worksheet is enabled.

Protecting cells is particularly useful when you create a worksheet for others to use but you want to prevent them from changing or deleting data.

/Range Protect has no effect unless you have enabled global protection using /Worksheet Global Protection Enable, or unless the protected cells are part of the range you are working with while using the /Range Input command.

1. To protect a range of cells, press the / to invoke the 1-2-3 command menu.

2. Move the pointer to Worksheet and press **<Return>**.

3. Move the pointer to Global and press **<Return>**.

4. Move the pointer to Protection and press **<Return>**.

5. Move the pointer to Enable and press **<Return>**.

   At this point, all cells in the worksheet are protected. The /Range Protect command will be used to disable protection for a range of cells.

6. Move the pointer to E4 and press the / to invoke the 1-2-3 command menu.

7. Move the pointer to Range and press **<Return>**.

8. Move the pointer to Unprotect and press **<Return>**.

9. Expand the pointer to G4 and press **<Return>**. You have now unprotected the range E4..G4.

   Enter a new birth date in cells E4..G4. Try to make an entry into any other cell in the worksheet.

   You do not need to use /Range Protect unless you previously allowed changes to cells with /Range Unprotect. If you enable global protection, you cannot change the contents of any cell in the worksheet unless you use /Range Unprotect.

DO: /RANGE INPUT COMMAND

Look at the illustration of the Range Command Menu and trace the path to the /Range Input command.

The /Range Input command limits the movement of the cell pointer to unprotected cells within a specified range.

/Range Input helps you to set up fill-in-the-blank entry forms to facilitate data entry. With the cell pointer limited to unprotected cells, protected cells can contain information you do not want modified. The /Range Input command is most useful in conjunction with macros.

1. With global protection still enabled and the range E4..G4 unprotected, move the pointer to E2 and press the / to invoke the 1-2-3 command menu.

2. Move the pointer to Range and press **<Return>**.

3. Move the pointer to Input and press **<Return>**.

4. Expand the pointer to G4 and press **<Return>**.

   Notice that the entire range moves to the upper left corner of the screen. You can only move the cell pointer to the unprotected cells in the range.

   Enter a new birth date in cells E4..G4. Try to make an entry into other cells in the input range.

5. End the /Range Input command by pressing **[Esc]** or by pressing **<Return>** without first typing or editing an entry.

   After you finish using the /Range Input command, the cell pointer returns to its initial positions.

6. Disable global protection by selecting the command, /Worksheet Global Protection Disable.

DO: /RANGE JUSTIFY COMMAND

Look at the illustration of the Range Command Menu and trace the path to the /Range Justify command.

/Range Justify treats a continuous column of test as a paragraph, rearranging the words so that none of the lines is longer than a specified width.

You can use /Range Justify if you want words in a series of long labels to appear on the screen at the same time, or to be printed within specific margins. For /Range Justify to work, the long labels must all start in the same column and appear in consecutive rows. The first non-label cell in the column signifies the end of the "paragraph."

1. To enter an explanation of how to use the BIRTHDAY worksheet, move the pointer to E6 and type the following as a continuous long label (one line):

To calculate your age in Years, Months, and Days--enter the numerical Month you were born under the MONTH heading; enter the numerical Day you were born under the Day heading;

2. Move the pointer to E7 and type the following as a continuous long label (one line) and press **<Return>**:

   Enter the two-digit Year you were born under the Year heading. Press <Return> and then press [Esc] to view your age in Years, Months, and Days.

3. You want these long labels to appear as a paragraph that is three columns wide (E, F, and G), so move the pointer back to E6 and press the / to invoke the 1-2-3 command menu.

4. Move the pointer to Range and press **<Return>**.

5. Move the pointer to Justify and press **<Return>**.

6. Expand the pointer to G20 and press **<Return>**.

   In specifying a multiple-row range as we have done, 1-2-3 restricts the justification to the exact area you have specified. If you do not specify an area large enough for the labels you are trying to justify, you get an error message and should try again specifying a larger area.

   After justification the width of the specified range becomes the new width for the labels in the first column. The maximum width is 240 characters. The width depends on the number of columns you specify as part of the range and the current width of those columns.

   You cannot use /Range Justify to justify text in more than one range at a time.

DO: CREATING A TEMPLATE

A template is an empty worksheet with formulas. Usually a template is created by one person for use by others. The commands you have just learned when used together will work as a template. Do the following steps to see how the completed BIRTHDAY template would work:

1. Use the /Worksheet Global Recalculation Manual command to turn on manual recalculation and turn off automatic recalculation.

2. Use the /Range Erase command to erase cells E4...G4.

3. Move the pointer to cell A1 to set the worksheet so that it will all be displayed.

4. Use the /Worksheet Global Protection Enable command to protect all cells in the worksheet.

5. Use the /Range Unprotect command to unprotect the range E4..G4.

6. Use the /Range Input command to create an input range of E2..G20.

7. End the /Range Input command by pressing **[Esc]**.

8. Press the **F9** function key to recalculate the worksheet.

9. Repeat these steps until you are familiar with this process.

EXERCISES

(1) Load the Loan Payment Worksheet, PAYMENT, and do the following:

A. Use the /Worksheet Global Recalculation Manual command to turn on manual recalculation and turn off automatic recalculation.

B. Use the /Range Erase command to erase the data cells for principal, interest, and number of years.

C. Type the following documentation at the bottom of the worksheet beginning in column A and justify it as five columns wide:

This worksheet will calculate a loan payment amount for any specified principal amount, interest rate, and term (number of payments). Enter any principal amount as any whole number--do not include commas or dollar signs. Enter the interest rate with the percent sign. For instance, 12.5% would be entered as 12.5%. The number of years should be entered as any whole number. After entering this data, press [Esc] to calculate the loan payment.

D. Move the pointer to cell A1 to set the worksheet so that it will all be displayed.

E. Use the /Worksheet Global Protection Enable command to protect all cells in the worksheet.

F. Use the /Range Unprotect command to unprotect cells where the data is entered for Principal Amount, Interest Rate, and Number of Years.

G. Make these cells Input cells.

H. Enter the following data and press **[Esc]** to end the /Range Input command:

Principal Amount:	10000
Interest Rate:	12.5%
No. of Years:	8

J. Press the F9 function key to recalculate the worksheet.

K. Test the worksheet. If the worksheet is not correct, then repeat these steps again.

L. Save the worksheet as PAYMENT, and then obtain a print.

CASE STUDY: PRODUCTIVITY ANALYSIS

In a certain office it was determined that an operator takes an average of 250 keystrokes to complete a particular form. This average is used as the criteria for evaluating the performance of all other operators.

If you enter the number of hours worked and the number of forms completed into a worksheet template, the template could calculate the speed of each key operator and the percentage of his or her contribution to the total work output. The maximum, minimum, and average totals of keystrokes and documents could also be reported for comparison purposes. (Applying this model to other types of productivity analysis would require no more than replace the number of keystrokes with the criteria that fit your product.)

Set up your template like the following model:

PRODUCTIVITY ANALYSIS

KEYSTROKES PER DOCUMENT: 250

EMPLOYEE NAME	TOTAL DOCS	DIRECT HOURS	TOTAL KEYSTRKS	KEYSTRKS PER HOUR	KEYSTRKS PER MIN	DOCS PER MINUTE	% OF TOTAL
TOTALS:							
MAXIMUMS:							
MINIMUMS:							
AVERAGES:							

Formulas needed for this application are as follows:

TOTAL KEYSTROKES = TOTAL DOCUMENTS * KEYSTROKES PER DOCUMENT
KEYSTROKES PER HOUR = TOTAL KEYSTROKES / DIRECT HOURS
KEYSTROKES PER MINUTE = KEYSTROKES PER HOUR / 60
DOCUMENTS PER MINUTE = KEYSTROKES PER MINUTE / KEYSTROKES PER DOCUMENT
PERCENT OF TOTAL = DOCUMENTS PER MINUTE / TOTAL DOCUMENTS PER MINUTE

The TOTALS, MAXIMUMS, MINIMUMS, and AVERAGES at the bottom of the worksheet are created using the appropriate function for the data in each column.

A. Use the /Worksheet Global Recalculation Manual command to turn on manual recalculation and turn off automatic recalculation.

B. Create the worksheet template and enter all formulas as specified above. Format numeric columns to display with 0 decimal places. Format percentages to display with the % sign and 0 decimal places.

C. Move the pointer to cell A1 to set the worksheet so that it will all be displayed.

D. Use the /Worksheet Global Protection Enable command to protect all cells in the worksheet.

E. Use the /Range Unprotect command to unprotect cells where the data is entered for Employee Name, Total Documents, and Direct Hours.

F. Make these cells Input cells.

G. Enter the following data into the input range then press **[Esc]** to end the /Range Input command:

EMPLOYEE NAME	TOTAL DOCS	DIRECT HOURS
Miller,M.	2000	35
Ripley,R.	1800	32
Harvey,H.	2200	30
Brown,B.	1900	20
King,K.	1340	26
Albert,A.	1560	28
Edward,E.	1980	30
Crown,C.	1600	24
Darwin,D.	1750	34
Geary,G.	1440	22

H. Press the F9 function key to recalculate the worksheet.

I. If the worksheet is not correct repeat these steps again.

J. Save the worksheet as PRODANLS, and then obtain a print.

CASE STUDY: ACCOUNTANT'S WORKSHEET

Create an accountant's 8-column worksheet to calculate the income statement and balance sheet for a business enterprise.

Your worksheet should be organized like the following template (all Debits and Credits should be in separate columns):

Company Name
Work Sheet
For Period Ending mm/dd/yy

ACCOUNT		TRIAL BALANCE		ADJUSTMENTS		INCOME STMT.		BALANCE SHEET	
TITLE	C	Debit	Credit	Debit	Credit	Debit	Credit	Debit	Credit
CASH	0								
ACCT.REC.	0								
SUPPLIES	0								
PREPAID RENT	0								
EQUIPMENT	0								
ACC DEP-EQPT	0								
BUILDING	0								
ACC DEP-BLDG	0								
NOTES PAY.	0								
ACCOUNTS PAY	0								
SALARIES PAY	0								
CAPITAL	0								
DRAWING	0								
FEES REVENUE	1								
DEP EXP-EQPT	1								
DEP EXP-BLDG	1								
ADVERTISING	1								
RENT	1								
SALARIES	1								
SUPPLIES	1								
UTILITIES	1								
TOTAL									
NET INCOME									
TOTAL									

Create the template as follows:

A. When performing calculations using debit and credit columns of the worksheet, credits should be treated as negative (subtract credits) and debits should be treated as positive. Then use the absolute value function (@ABS) to return a credit result into a positive.

B. For purposes of automatically calculating the income statement and balance sheet, balance sheet accounts are assigned a numeric code 0 and income statements are assigned a numeric code 1.

C. Income statement and balance sheet columns require an imbedded @IF selection to determine: 1) if the account is an income statement or balance sheet account; 2) if the result of the calculation is positive (debit) or negative (credit):

(1) Formula for INCOME STATEMENT DEBIT (Code 1) and BALANCE SHEET DEBIT (Code 0):

IF(Code=1 THEN IF (Trial Balance Debit - Trial Balance Credit + Adjustment Debit - Adjustment Credit < 0 THEN 0 ELSE Trial Balance Debit - Trial Balance Credit + Adjustment Debit - Adjustment Credit) ELSE 0)

Enter the formula in the Income Statement Debit column and copy the formula down the column. Then enter the same formula (for Code=0) in the Balance Sheet Debit column and copy the formula down the column.

(2) Formula for INCOME STATEMENT CREDIT (Code 1) and BALANCE SHEET CREDIT (Code 0):

IF(Code=1 THEN IF (Trial Balance Debit - Trial Balance Credit + Adjustment Debit - Adjustment Credit < 0 THEN Absolute Value (Trial Balance Debit - Trial Balance Credit + Adjustment Debit - Adjustment Credit) ELSE 0) ELSE 0)

Enter the formula in the Income Statement Credit column and copy the formula down the column. Then enter the same formula (for Code=0) in the Balance Sheet Credit column and copy the formula down the column.

D. The net income is determined by subtracting income statement total credits and total debits and using the same formulas:

(1) Formula for NET INCOME DEBIT and BALANCE SHEET CREDIT:

IF (Total Income Credit - Total Income Debit > 0 THEN Total Income Credit - Total Income Debit ELSE 0)

Enter the formula in the Net Income Statement Debit cell and copy the formula to the Net Income Balance Sheet Credit cell.

(2) Formula for NET INCOME CREDIT and BALANCE SHEET DEBIT:

IF (Total Income Debit - Total Income Credit > 0 THEN Total Income Debit - Total Income Credit ELSE 0)

Enter the formula in the Net Income Statement Credit cell and copy the formula to the Net Income Balance Sheet Debit cell.

E. Format all numerical columns as a fixed number with 2 decimals.

F. Protect all cells on the worksheet and then unprotect and make input cells for the company heading and date, trial balance columns, and adjustments columns and protect all other cells. Turn off automatic calculation of formulas.

G. Save the template in a file named ACCTWS.

Accounting Worksheet Problems

(1) Use the accountant's worksheet template to input the following Trial Balance and Adjustment data Mark Mulligan Engineering:

Trial Balance--December 31, 1986

Account Title	Debit	Credit
Cash	2800.00	
Accounts Receivable	4700.00	
Supplies	750.00	
Prepaid Rent	2000.00	
Equipment	1600.00	
Accumulated Depreciation-Equipment		300.00
Building	22000.00	
Accumulated Depreciation-Building		4100.00
Notes Payable		5200.00
Accounts Payable		2300.00
Mark Mulligan, Capital		16600.00
Fees Revenue		8950.00
Advertising Expense	200.00	
Salary Expense	2900.00	
Utilities Expense	500.00	
	37450.00	37450.00

Date	Adjustments
Sept. 30	Estimated depreciation on the equipment is $300.00, and on the building, $550.00
30	One half of the prepaid rent has expired.
30	Salaries accrued but not paid to employees is $450.00
30	Supplies used during the period were $200.00
30	Mark Mulligan withdrew $800.00 for personal use

(2) Save the worksheet in a file as ACCT01 and obtain a print using condensed mode.

(3) Use the accountant's worksheet template to input the following Trial Balance and Adjustment data for Larry Legal, Attorney-at-Law and then press F9 to recalculate all formulas:

Larry Legal, Attorney-at-Law
Trial Balance--January 31, 1986

Account Title	Debit	Credit
Cash	2363.00	
Accounts Receivable	1775.00	
Supplies	410.00	
Prepaid Rent	1500.00	
Prepaid Insurance	1200.00	
Equipment	1350.00	
Accumulated Depreciation-Equipment		
Notes Payable		700.00
Accounts Payable		210.00
Larry Legal, Capital		5750.00
Fees Revenue		2625.00
Salary Expense	520.00	
Utilities Expense	167.00	
	9285.00	9285.00

Date	Adjustments
Jan. 31	Estimated depreciation on the equipment is $55.00.
31	One third of the prepaid rent has expired.
31	Salaries accrued but not paid to employees is $465.00.
31	Prepaid insurance that has expired is $100.00.
31	Supplies used during the period were $95.00
31	Withdrew $300.00 for personal use.

(4) Save the worksheet in a file as ACCT02 and obtain a print using condensed mode.

LESSON 13

ADVANCED COPY AND MOVE COMMAND SKILLS

OBJECTIVES:

* Discuss concepts of copying and moving cells and ranges
* Copy a cell to another cell
* Copy a cell to a range
* Copy a range to a range
* Copy formulas using relative cell addresses
* Copy formulas using absolute cell addresses
* Moving cell entries and ranges from one part of the worksheet to another

REQUIRED MATERIALS:

* Paper and pen or pencil
* A DOS diskette
* Lotus 1-2-3 System Disk
* A practice disk
* IBM-PC with 1 or 2 diskette drives or hard disk and printer

READ: COPY COMMAND

The /Copy command creates new cell entries that are copies of existing entries. This can save you a great deal in time and keystrokes. But more important, /Copy provides the key to one of 1-2-3's greatest strengths--the ability to project and extrapolate. This capability is what makes 1-2-3 an important tool for rapid and confident decision-making. For instance, after you enter a formula to perform a calculation, you can use /Copy to repeat the same formula for all rows or columns using the same formula.

Copying formulas is the most sophisticated use of the /Copy command.

DO: STARTING 1-2-3

Start 1-2-3 using the appropriate Lotus 1-2-3 Start-Up Procedure.

READ: THE /COPY PROCEDURE

The /Copy Procedure is relatively simple for such a powerful command and works the same in all situations:

A. Move the pointer to the cell or the beginning of the range from which you are going to copy.

B. Select the /Copy command.

C. Indicate a "From" cell or range--the cell or cells whose entries you wish to copy. This is sometimes called the source cell or range. You may move the pointer or type the source cell or range. (Since in Step 1 you move the pointer to the source cell, you should be able to just press **<Return>** at the "From" prompt.

D. Indicate a "To" cell or range. This is sometimes called the target cell or range. You may move the pointer or type the target cell or range. It is recommended that you point to cell ranges rather than typing them in order to maintain accuracy and efficiency. Then press **<Return>**.

Although you have already used the /Copy command in previous modules, let's review the /Copy Procedure for cells, ranges, and formulas making mention of certain principles that govern the /Copy Procedure.

DO: /COPY FROM A CELL TO A CELL

1. Move the pointer to cell A2 and type, **APRIL EXPENSES**.

2. Move the pointer to cell D2 and type, **MAY EXPENSES**.

3. Move the pointer to cell A4 and type, **RENT** and press **<Return>**.

4. Move the pointer to cell B4 and type the number 400 and press **<Return>**.

5. Use the /Range Format Currency 2 command to format this single cell to currency with 0 decimal places.

6. Using the /Copy procedure, copy cell A4 to cell D4. The "From" cell is A4 and the "To" cell is D4.

7. Using the /Copy procedure, copy cell B4 to cell E4. The "From" cell is B4 and the "To" cell is E4.

   REMEMBER THIS:

   Both cell contents and cell formats are copied when using the /Copy command.

DO: /COPY FROM A CELL TO A RANGE

1. Move the pointer to cell A3 and fill the cell with double lines by using the repeating label-prefix character \ (backslash). Type \= and press **<Return>**.

2. Now use the /Copy procedure to copy cell A3 to cells B3 through E3. The "From" cell is A3. The "To" range is cells B3..E3. Notice, this procedure will draw a line across the worksheet.

   REMEMBER THIS:

   When using the /Copy command to copy from a single cell to a range, the source will be a cell and the target will be a range.

DO: /COPY FROM A RANGE TO A RANGE

1. To make a copy of the line in row 3 to row 7, move the pointer to cell A3 and use the /Copy procedure to copy cells A3 through E3 to cells A7 though E7. The "From" range is A3..E3. The "To" range is A7.

2. Move the pointer to A5 and type, **FOOD**.

3. Move the pointer to B5 and type, **260**.

4. Move the pointer to A6 and type, **AUTO**.

5. Move the pointer to B6 and type, **130**.

6. Now use the /Copy procedure to copy cells A5 through A6 to cells D5 through D6. The "From" range is A5..A6. The "To" range is cell D5.

   Notice: It is not necessary to indicate the complete range for the target range when copying from a range to a range.

7. Move the pointer to A8 and type, **TOTAL**.

8. Move the pointer to B8 and type the formula, **@SUM(B4..B6)** and press **<Return>**.

9. Use the /Range Format Currency 2 command to format the range B8..B4 to currency with 0 decimal places.

10. Now use the /Copy procedure to copy cells A8 through B8 to cells D8 through E8. The "From" range is A8..B8. The "To" range is cell D8.

Your worksheet should look like this:

B8: (C2) @SUM(A4..A6)

	A	B	C	D	E	F	G	H
1								
2	APRIL EXPENSES			MAY EXPENSES				
3	==========	==========		==========	==========			
4	RENT	$400		RENT	$400			
5	FOOD	$260		FOOD				
6	AUTO	$130		AUTO				
7	==========	==========		==========	==========			
8	[TOTAL	$790]		TOTAL	$400			

11. Complete the worksheet by typing 225 in E5 and 85 in E6, then format those cells to Currency with no decimal places.

Your completed worksheet should look like this:

E6: (C2) 85

	A	B	C	D	E	F	G	H
1								
2	APRIL EXPENSES			MAY EXPENSES				
3	==========	==========		==========	==========			
4	RENT	$400		RENT	$400			
5	FOOD	$260		FOOD	$225			
6	AUTO	$130		AUTO	[$85]			
7	==========	==========		==========	==========			
8	TOTAL	$790		TOTAL	$710			

REMEMBER THIS:

When using the /Copy command to copy from a range to a range, the source will be a range, and the target will be a cell (the beginning of the target range).

READ: SOME THINGS TO REMEMBER ABOUT /COPY

* Starting at each cell of the "To" range, 1-2-3 attempts to place a copy of the entire "From" range.

* Both cell contents and cell formats are copied.

* /Copy overwrites the previous contents of cells.

* Don't indicate a "To" range that overlaps the "From" range.

* If a copied entry would fall outside the worksheet, a "Worksheet Full" error occurs.

READ: /COPYING FORMULAS

The operations involving the /Copy command sometimes involves only making exact copies of each cell's contents--either a number or a label.

However, when using formulas, you rarely want 1-2-3 to perform the same exact calculation at several different places in the worksheet. More than likely you will want 1-2-3 to perform a similar, not identical, calculation at different places in the worksheet.

Previous modules have introduced the concepts of relative and absolute cell addresses. But in case you have forgotten, a relative cell reference in a formula will change when using the /Copy to a cell reference that is the same relative distance away from its new location. An absolute cell reference in a formula will always refer to the same cell in the worksheet. In a formula an absolute cell address is one whose column and row specifiers are preceded by dollar signs.

Some things to remember about copying formulas:

* An absolute cell address is exactly the same in the copied formula as in the original formula.

* A relative cell address is different in the copied formula from the original formula.

* In copying a range specification, 1-2-3 adjusts each of the two cell addresses independently.

* If a formula to be copied includes a range name (e.g., FORMULA1), 1-2-3 acts as if you specified the range with relative cell addresses. But if you precede the range name with a dollar sign ($) (e.g., $FORMULA1), 1-2-3 uses absolute cell addresses instead.

READ: MOVE COMMAND

The /Move command transfers a range of cells from one part of the worksheet to another, while maintaining all functional relationships among the cells.

This command is quite powerful and particularly useful for redesigning a worksheet from a previously existing worksheet. It allows you to postpone decisions regarding the final visual design of a worksheet so that you can concentrate on building the formulas. You can change your mind without having to pay the penalty of retyping all your formulas.

REMEMBER THIS:

If you move data to an area of the worksheet that already contains data, 1-2-3 replaces this data with the moved data. Unles you want to replace the data, choose an empty area of the worksheet for your data to be moved to.

READ: USING THE /MOVE COMMAND

The /Move command is a powerful tool, but you must use it with care. The whole idea of the /Move command is to transfer cell entries between FROM and TO cells. Formulas that depend on the transferred entries will continue to do the same work. In such formulas 1-2-3 replaces the old address of an entry with its new address:

For example:

BEFORE: E10 contains the formula +C6*.05

/Move From C6 To D20

AFTER: E10 contains the formula +D20*.05

When cells are moved that had formulas that depended on the contents of the moved cell, the formulas are invalidated and appear as ERR.

When moving entries, be sure to pick an unused or unneeded area of the worksheet as the new home for the entries.

READ: THE /MOVE PROCEDURE

The /Move Procedure is relatively simple for such a powerful command and works the same in all situations:

A. Move the pointer to the cell or the beginning of the range which you are going to move.

B. Select the /Move command.

C. Indicate a "From" cell or range--the cell or cells whose entries you wish to move. This is sometimes called the source cell or range. You may move the pointer or type the source cell or range.

D. Indicate a "To" cell or range. This is sometimes called the target cell or range. You may move the pointer or type the target cell or range. It is recommended that you point to cell ranges rather than typing them in order to maintain accuracy and efficiency. Then press **<Return>**.

DO: MOVING CELL ENTRIES AND RANGES

1. Using the /Move procedure, move range D2..E8 to cell A10. The "From" range is D2..E8 and the "To" cell is A10.

   REMEMBER THIS:

   If you move a cell containing a formula, the formula stays the same using the /Move command.

2. Move the pointer to B12. Select the /Move command and move cell B12 to cell C12. The "From" range is B12 and the "To" range is C12. Notice the total in B16 stays the same.

3. Move the pointer to B16. Notice the formula displayed on the status line has been changed from @SUM(B12..B14) to @SUM(C12..B14).

   REMEMBER THIS:

   If you move the contents of a cell to which a formula refers, 1-2-3 changes the formula to reflect the new cell location.

DO: TRANSPOSE A RANGE

The /Range Transpose command is a special type of copy command that will rearrange data in the worksheet by changing a horizontal arrangement to a vertical one, or vice versa:

1. Move the pointer to A4 and select the /Range Transpose command.

2. Move the pointer to B6 and press **<Return>**. The "From" range is A4..B6.

3. Move the pointer to E4 and press **<Return>**. The "To" range is E4. Notice the range is copied to E4..G5 and that the columns have been transposed to rows.

READ: THE /RANGE TRANSPOSE COMMAND

Transposing a range leaves the original range as it was; the operations results in a rearranged copy of the original range.

Do not use this command if your range contains formulas with relative cell addresses. 1-2-3 does not adjust relative cell addresses to refer to the same cells. Use the /Move command instead.

/Range Transpose does not work if the FROM and TO ranges share the same upper left corner cell.

REMEMBER THIS:

If you transpose a range to a location whose cells already contain data, 1-2-3 replaces their contents with the transposed range. Formulas that depended on the previous contents of the "To" range will now refer to the transposed cell entries.

DO: SAVE THE WORKSHEET

Save the worksheet using the /File Save command and the file name, EXPENSES.

DO: PRINT THE WORKSHEET

Print the worksheet using the /Print Printer command.

EXERCISES

CASE STUDY: SALES SUMMARY

Data Products, Inc. is analyzing increases and decreases in sales for the last two years to find out which products are moving and which are not. The information will be used for the purpose of inventory forecasting and budget planning for the current year.

Using Lotus 1-2-3 creates a Comparative Sales Summary using the following data and template:

DATA PRODUCTS, INC.
COMPARATIVE SALES SUMMARY, 1987-1988

		-----QUANTITY SOLD-----			--------SALES AMOUNT--------		
ITEM	DESC.	1988	1987	INCREASE DECREASE	1988	1987	INCREASE DECREASE
104	BINDER,3 RING	301	100	201	575.24	191.00	384.24
171	ALBUMS	55	121	-66	560.92	1220.00	-659.08
325	CLAMP BINDERS	701	100		205.39	39.00	
921	DEC CONNECTORS	918	150		2700.25	325.50	
820	DISK FILTER	65	121		1770.19	3672.39	
105	FICHE PANELS	608	120		1430.55	282.00	
130	FLEXIBLE DISK	77	151		500.90	1063.80	
308	DISK HOLDER	401	100		390.00	97.00	
292	FICHE MAILERS	203	60		1775.00	437.00	
607	MCA PORTA TAPE	305	60		1875.07	307.00	
215	FICHE PAGES	706	120		820.15	139.20	
185	FLIP FILES	706	100		900.19	127.00	
960	EXTERNAL CABLE	201	100		350.25	175.00	
214	FICHE BINDERS	301	100		359.94	109.00	
801	INTERNAL CABLE	653	120		150.00	25.20	
300	MAG CARD PANE	902	100		300.00	33.00	
568	MCA BINDERS	709	100		1333.11	188.00	
730	DEC RIBBON	809	100		1151.44	129.00	
310	MULTI-DISK RACK	603	100		640.55	106.00	
574	CODING FORMS	70	121		590.30	1302.72	
111	FICHE FILES	506	120		1200.00	280.40	
127	INDEX CARDS	501	120		660.00	52.80	
487	CONTROL BOARDS	81	151		1804.29	3504.29	
909	MYLAR TAPE	401	100		303.25	75.00	
825	PAPER TAPE TRAY	512	50		1995.09	194.50	
590	PRINTOUT DESIGN	807	120		950.23	140.40	
409	REFERENCE RACK	701	50		1950.80	139.00	
505	REPORT COVERS	401	150		407.45	151.00	
181	TRAVEL CASE	912	150		1805.54	214.50	
TOTALS		xxxxx	xxxx	xxxx	xxxxx.xx	xxxxx.xx	xxxx.xx

Include the following on the worksheet:

(1) Quantity Increase and Decrease is Quantity Sold 1988 minus Quantity Sold 1987.
(2) Sales Increase and Decrease is Sales Amount 1988 minus Sales Amount 1987.
(3) All columns should be formatted as shown in the template.
(4) All quantity and amount columns should be totaled (including Increase and Decrease columns).
(5) Save the file as SALESUMM and obtain a print.
(6) Sort the table by Item and obtain a print.
(7) Sort the table by Description and obtain a print.
(8) Move the SALES AMOUNT columns to the left of the QUANTITY SOLD columns and then obtain a print. (DON'T FORGET TO INSERT ENOUGH COLUMNS TO MOVE THESE COLUMNS TO EMPTY COLUMNS.)

CASE STUDY: INVESTMENT SUMMARY

You have been investing in the stock market and are interested in calculating what kind of return you are receiving on your investment as well as finding out which stocks are doing well and which are not. Create a Stock Investment Summary using the following data. Your worksheet should closely resemble the following template:

STOCK INVESTMENT SUMMARY

Company Name	No. of Shares	Price Per Share	Dividends Per Share	Sell. Price Per Share
CALICO INC.	150	10.00	0.07	6.51
RIO-RITA FOODS	250	50.03	5.20	90.00
ROBIN'S INN	150	25.00	0.15	14.10
FUTURE FOODS	100	50.00	0.16	49.60
HAM'S BURGERS	100	50.00	0.45	63.00
KEY'S SLIMRITE	50	10.08	3.00	64.00
AMERICAN STORE	200	25.00	0.16	25.60
BURGER BUN	50	30.00	0.80	40.00
MICKEY'S INN	100	70.00	0.88	72.16
NUMART GROCERY	200	44.00	0.30	43.50
PEDRO'S TACOS	150	30.00	0.08	29.60
QUEEN'S MART	50	20.00	0.06	24.50
RUSSEL'S	50	50.00	0.10	48.00
SAM'S GROCERY	100	12.00	1.25	21.25
STEAK HOUSE	100	50.00	0.09	49.60
VITA VILLAGE	150	20.01	0.30	5.00
SEA SUPPLIES	100	10.03	1.50	90.00
DON'S DRIVE IN	50	10.03	0.60	36.00
FUNGUS FOODS	200	70.00	0.09	72.90
SIZZLER HUT	200	50.01	2.00	60.00
TOTALS	xxxx			

Add the following columns to the worksheet:

A. TOTAL PRICE = No. of Shares X Purchase Price Per Share. (Insert after Price Per Share column).
B. TOTAL DIVIDENDS = Dividends Per Share X Number of Shares. (Insert after Dividends Per Share column).
C. TOTAL SELLING PRICE = Selling Price Per Share X No. of Shares. (Insert after Selling Price Per Share column).
D. AMOUNT GAIN LOSS = Total Selling Price + Total Dividends - Total Price. (Insert after Total Selling Price column).
E. PERCENT GAIN LOSS = Amount Gain Loss / Total Price. (Insert after Amount Gain Loss column).

Include the following on the worksheet:

(1) Total only the NO. OF SHARES column and the calculated columns mentioned above. (Exception: The total of PERCENT GAIN LOSS should be the total of AMOUNT GAIN LOSS / total of TOTAL PRICE.
(2) Format all columns with two decimal places, except percentages should be formatted to display the % sign with one decimal place.
(3) Save the file as STOCKINV and obtain a print.
(4) Sort the summary in alphabetical order by Company Name and obtain a print.
(5) Create a modified version of your worksheet by moving the columns, COMPANY NAME, NO.OF SHARES, PRICE PER SHARE, TOTAL PRICE, SELL PRICE PER SHARE, and TOTAL SELLING PRICE to an empty area of the worksheet. Then add another column named, DIFFERENCE which is TOTAL PRICE - TOTAL SELLING PRICE. Obtain a print of only the modified version of the worksheet. Do not save this version of the STOCKINV worksheet.

LESSON 14

ADVANCED FILE AND PRINT COMMAND SKILLS

OBJECTIVES:

* Describe /File commands
* Illustrate the /File Command Menu
* Explain /File Extract and /File Combine commands
* Create worksheets using /File Extract and /File Combine
* Use /File Erase and /File List commands
* Describe /Print commands
* Illustrate the /Print Command Menu
* Describe /Print commands
* Describe print destinations, default options and page layout
* Use /Print Printer Options Setup command
* Export a 1-2-3 file to dBASE III PLUS and use print options necessary for exporting a file

REQUIRED MATERIALS:

* Paper and pen or pencil
* A DOS diskette
* Lotus 1-2-3 System Disk
* A practice disk
* A dBASE III PLUS System Disk 1 and 2 (or other file program)
* IBM-PC with 1 or 2 diskette drives or hard disk and printer

READ: FILE COMMAND MENU

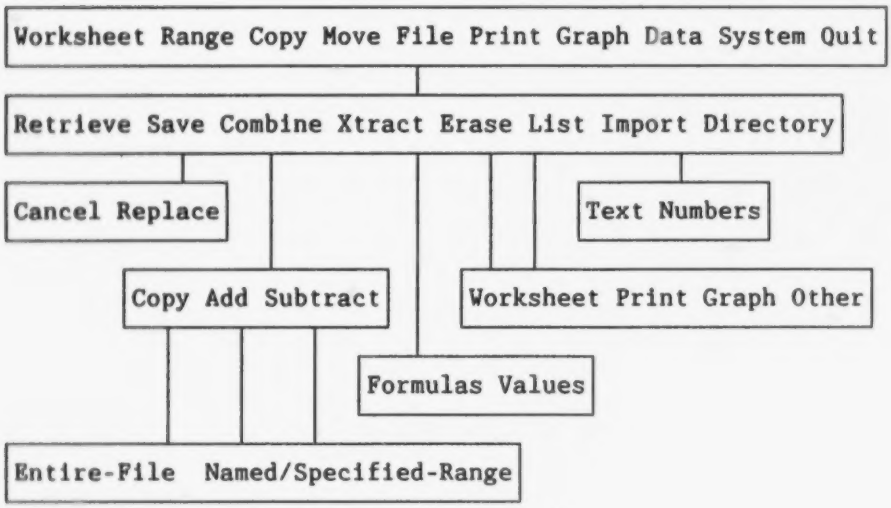
1-2-3 has a set of commands that allows you to store worksheet information on a disk.

It is necessary to store information on a disk because all information in the 1-2-3 worksheet area is lost when you end a 1-2-3 processing session or when the computer is powered off. Since 1-2-3 processes only one worksheet at a time, you need a place to store worksheets when you are not using them.

Some advantages of storing worksheets on a disk are that disks are interchangeable and so you may remove a diskette from a drive and insert another during a 1-2-3 session and that disks act as a library of information. You can combine data from a stored worksheet with what you are currently using or you might extract part of a worksheet and store it separately. Additionally, 1-2-3 can store data to be used by another program, and it can process data that other programs have stored on a disk.

The following diagram illustrates the /File command structure used by 1-2-3:

FILE COMMAND MENU


Worksheet Range Copy Move File Print Graph Data System Quit
Retrieve Save Combine Xtract Erase List Import Directory
Cancel Replace
Text Numbers
Copy Add Subtract
Worksheet Print Graph Other
Formulas Values
Entire-File Named/Specified-Range

READ: /FILE RETRIEVE COMMAND

The /File Retrieve command, used in most of the previous lessons, will load files from the disk into the computer's memory. A file contains all of the worksheet data as well as codes representing features of the worksheet. These features include cell formats, range names, column widths, and other characteristics as well as graph specifications.

The file is identified by its file name, and the number of files that can be saved on the disk is limited only by the capacity of the disk. There is also a limit to the number of separate file names which the disk can accept, but the disk capacity is usually exceeded before the file name limit.

When a file is retrieved, the contents in memory are automatically cleared in preparation for loading the new data.

Important data and worksheet formulas must be saved before another file is loaded using the /File Retrieve command.

The name of the file to retrieve may be specified in one of two ways. First, the name to retrieve may be typed from the keyboard. Second, when the /File Retrieve command is selected, the names of the files on the disk are displayed on the third line of the control panel. Then, using the same method as command menus, a selection is made by highlighting (pointing to) a file name and pressing <Return>. If there are more than six worksheet files on the disk, the remainder of the files are hidden from view until the command pointer is moved past either end of the list.

READ: /FILE SAVE COMMAND

The /File Save command is used to record the worksheet in memory to a data disk. A file is created using the file name which you supply.

File names may be supplied in one of two ways. First, the program will request that a file name be typed if the worksheet in memory is a new worksheet. A file name must be used that is consistent with the DOS rules for proper file names. If no extension is included, 1-2-3 will automatically add the extension, .WK1. Second, the program will present the name of the last retrieved file as a suggested name for the file to be saved. This is also known as the default name. If additions and modifications have been made to the worksheet and it is appropriate to maintain the same name, the file default name is accepted by pressing <Return>.

If a file name is chosen that already exists on the disk, the program will not proceed to automatically save the worksheet. If it did, the file data on the disk would be lost and replaced by the data in memory. Instead, the program displays another message asking if the command should be cancelled or if the file on the disk should be replaced with the one in memory. Pressing R will replace the file and pressing C will cancel the command.

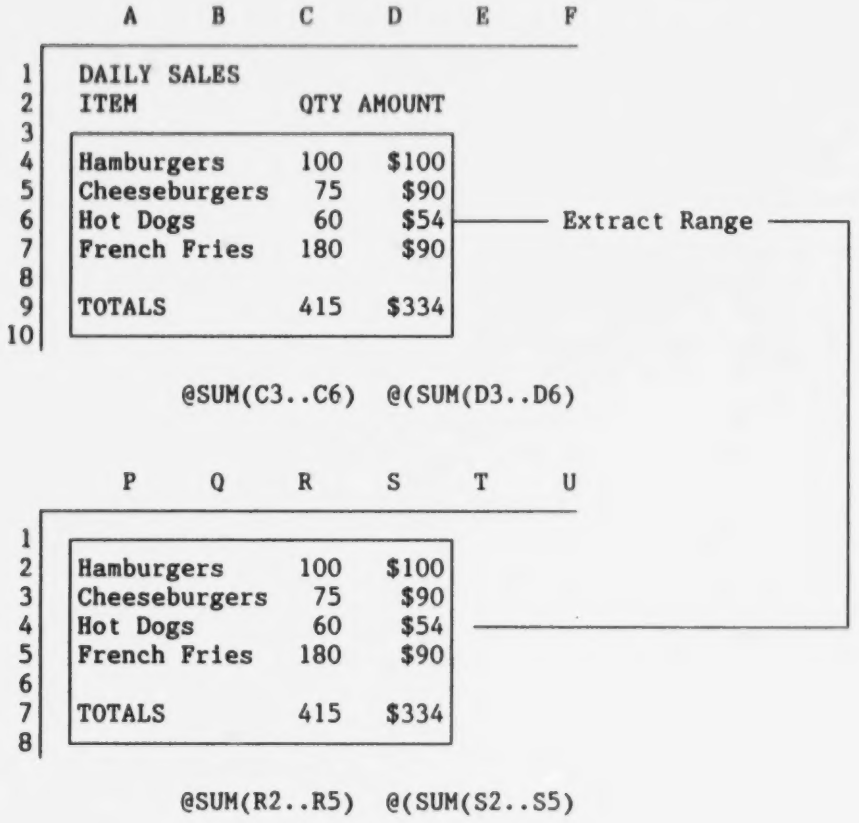
READ: /FILE EXTRACT COMMAND

The /File Extract command allows data to be extracted from one file for use in another file. Usually the worksheet in memory is saved as a complete file. However, there are times when it might be appropriate to save a portion of the worksheet in memory to a separate file.

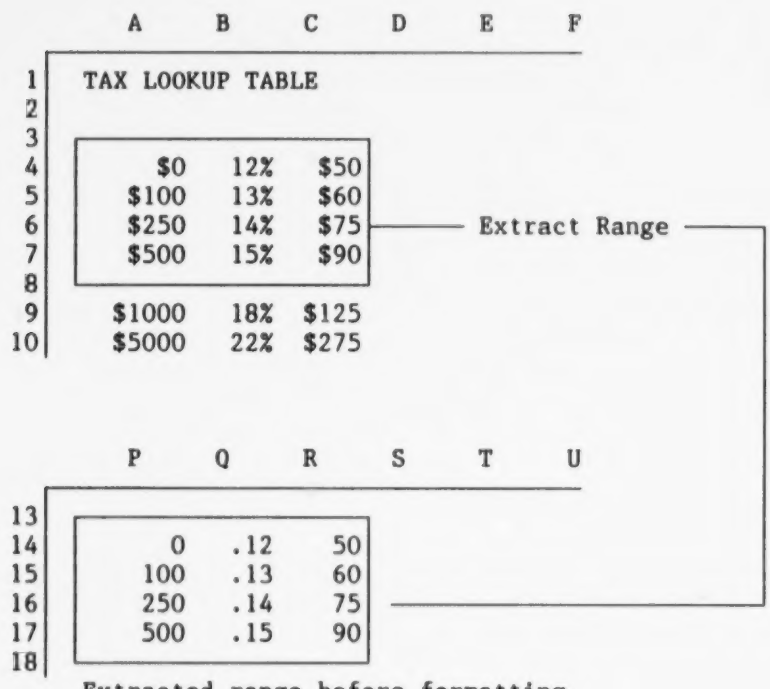
For example, you might want to save a group of related and organized formulas or you might want to save sections of data to be used with other worksheets.

There is an option with the /File Extract command to save the formulas contained in cells or to save only the existing values without the formulas:

Extract Formulas to a New File



Extract Values to a New File



Extracted range before formatting

The /File Extract command is one of the File subcommands and is selected by typing /FX. The next part of the command determines whether formulas or values are to be transferred to the new file (as shown in the preceding examples). If the Formulas options is selected, all formulas in the range to be extracted will be copied to the new file. If the values options is selected, only the current displayed values produced by any formulas in the extract range will be copied to the new file.

The next part of the command requests a name for the extracted file. Next a range of the cells to be extracted and saved to the file is specified. Finally, all the labels and numbers in the specified range will be copied to the new file, along with all formulas if the Formulas option is selected. Just the values displayed by the formulas will be copied if only the Values option is selected.

READ: /FILE COMBINE COMMAND

The /File Combine command allows a file to be retrieved from the disk and incorporated in a worksheet that is already in memory. The /File Combine command differs from the /File Retrieve

command in that the /File Retrieve command erases the worksheet on the screen before loading the new file into memory while the /File Combine allows one worksheet to be joined to another to create a worksheet which includes the data from both.

The /File Combine command allows the contents of a file on the disk to be copied over, added to, or subtracted from the contents of the worksheet in memory. Labels are not added, but common cells will have their values replaced, added, or subtracted according to the selection made. The data on the disk remains there and does not change. The data in computer memory will be changed or lost. The /File Combine command may combine the entire file on the disk or just a range of it.

The first step in using the /File Combine command is to position the pointer properly before the command is initiated. The upper left corner of the file or named range that is "brought in" from the disk will be positioned at the pointer location. If the pointer is not located properly, the data that is combined with the worksheet in memory will not be in the correct position. This can cause confusion, incorrect calculations, or a loss of data. Problems can be avoided if the pointer is properly located at the initiation of the command.

The command is started by typing /FC. Three subcommand choices are available next:

- C replaces cells of the worksheet in memory with all of the cells from the file
- A adds the contents of the cells in the file to the contents of the same cells of the worksheet in memory
- S subtracts the contents of the cells in the file from the contents of the same cells of the worksheet in memory

The next choice in the /File Combine command sequence allows an entire file (E) or a named range (N) to be combined, added, or subtracted.

DO: USING THE /FILE EXTRACT AND /FILE COMBINE COMMANDS

Now let's create a worksheet that will demonstrate how both the /File Extract and /File Combine commands operate. This example will involve several worksheets which keep track of quarterly and yearly sales by region.

First detailed worksheets of regional sales for each month with quarterly totals will be developed. Next, a yearly summary worksheet will display the quarterly results and year-to-date totals for all regions. The data is entered only once, and the results are transferred to other worksheets accurately.

1. Create the following first quarter worksheet:

	A	B	C	D	E	F	G
1	QUARTERLY SALES BY REGION--QUARTER 1						
2							
3	REGION	MONTH 1	MONTH 2	MONTH 3	TOTAL		
4							
5	NORTH	600	800	600			
6	EAST	800	1200	1000			
7	SOUTH	500	700	800			
8	WEST	1000	1500	1500			
9							
10	TOTAL						

2. Add formulas to calculate month totals and quarter totals, format the worksheet properly, obtain a print of the worksheet, and save the worksheet with the name, SALESQ1.

3. You are now going to transfer the quarterly totals to a yearly sales report using both the Extract and Combine commands.

   Position the pointer on cell **E5** and invoke the Extract command by typing **/FX**. Type **V** to select the Values option. At the file name prompt, type **Q1** and press **<Return>**. At the range prompt, move the pointer to cell **E10** so that the range **E5..E10** is highlighted and then press **<Return>**. The extract range will be saved in a file named Q1.

4. Clear the worksheet area by typing **/WEY**.

5. Now create the following yearly sales template and develop a formula to sum the totals by region. Do not develop a formula for the quarterly total because this formula is in your extracted file. (Zeroes will be displayed until data is placed in the worksheet.)

	A	B	C	D	E	F	G
1	YEARLY SALES BY REGION						
2							
3	REGION	QTR 1	QTR 2	QTR 3	QTR 4	TOTAL	
4							
5	NORTH					0	
6	EAST					0	
7	SOUTH					0	
8	WEST					0	
9							
10	TOTAL					0	

6. Format the worksheet properly, obtain a print of the worksheet, and save the worksheet with the name, SALESYR.

7. You are now going to transfer the quarterly totals from the extracted file, Q1 to the yearly sales worksheet using the Combine command.

   Position the pointer on cell **B5** and invoke the Combine command by typing **/FC**. Type **C** to select the Copy option. (The results would be the same if you selected the Add option because the cells in memory are blank.) Type **E** to select the Entire-File option since this is an extracted file. At the file name prompt, type **Q1** or move the pointer to the file name **Q1** on the command line and press **<Return>**.

   Your extracted file has now been combined into the yearly sales worksheet.

8. Save your worksheet again with the new totals and clear the worksheet area.

9. Now repeat these steps by creating a worksheet for each quarter and extracting the quarterly totals and combining them with the yearly sales worksheet. Be sure to save each quarterly worksheet and obtain a print. Use the file names, Q2, Q3, and Q4 for the extracted files. Obtain a print of the completed yearly sales worksheet. Clear the work area upon completion of this operation.

QUARTER 2

REGION	MONTH 1	MONTH 2	MONTH 3	TOTAL
NORTH	1000	1000	1000	
EAST	1500	1500	1000	
SOUTH	600	700	700	
WEST	1500	1500	1000	

QUARTER 3

REGION	MONTH 1	MONTH 2	MONTH 3	TOTAL
NORTH	900	700	400	
EAST	1200	1000	800	
SOUTH	800	600	600	
WEST	1000	800	700	

QUARTER 4

REGION	MONTH 1	MONTH 2	MONTH 3	TOTAL
NORTH	400	300	300	
EAST	500	300	200	
SOUTH	700	700	600	
WEST	900	800	800	

DO: /FILE ERASE AND /FILE LIST COMMANDS

The /File Erase command permits a file to be deleted from the data disk without leaving the worksheet. The /File List command will display the names of the worksheet, graph, or print files on the data disk. The remaining disk space is also displayed.

1. Type **/FLW** to list all the worksheet files on the data disk. Notice also the amount of free space remaining on the disk. You should see the files, Q1, Q2, Q3, and Q4 from the previous operation included in this list.

2. Type **/FEW** to select the command to erase a worksheet.

3. Move the pointer to highlight the file, **Q1**, and then press **<Return>**.

4. Type **Y** to confirm that you want to delete this file and complete the command.

5. Now delete the files Q2, Q3, and Q4 by repeating steps 2-4 for each of these files.

6. Type **/FLW** to again view the directory of worksheet files on the data disk. You should note that the files, Q1, Q2, Q3, and Q4 are no longer included in the list of worksheets.

7. Return to the worksheet and clear the worksheet area by typing, **/WEY**.

READ: /FILE IMPORT COMMAND

At times the data contained in a word processing document or database file will be needed in a 1-2-3 worksheet. The /File Import command permits text file created by other programs to be brought into the 1-2-3 worksheet without typing the data. Some manipulation and editing may be necessary to make the imported data in a format appropriate for importing from 1-2-3.

To use the Import command, you would first be sure that your data is in an appropriate format for importing. 1-2-3 has a translate program that will restructure the format of many popular software packages so that they can be imported into a 1-2-3 worksheet. This is accomplished by selecting the Translate program from the LOTUS Access System menu.

Once the data is in a proper format for importing, you would select the import command by typing /FI. The next options would make it possible to import the file by field or by record. The T (Text) option imports each line as a long label. However,

numbers will not be entered into individual cells. Selecting N (Numbers) will import each number into the worksheet but will leave out all labels unless they originally are surrounded by quotation marks. A combination of both of these options will succeed in importing most data into 1-2-3.

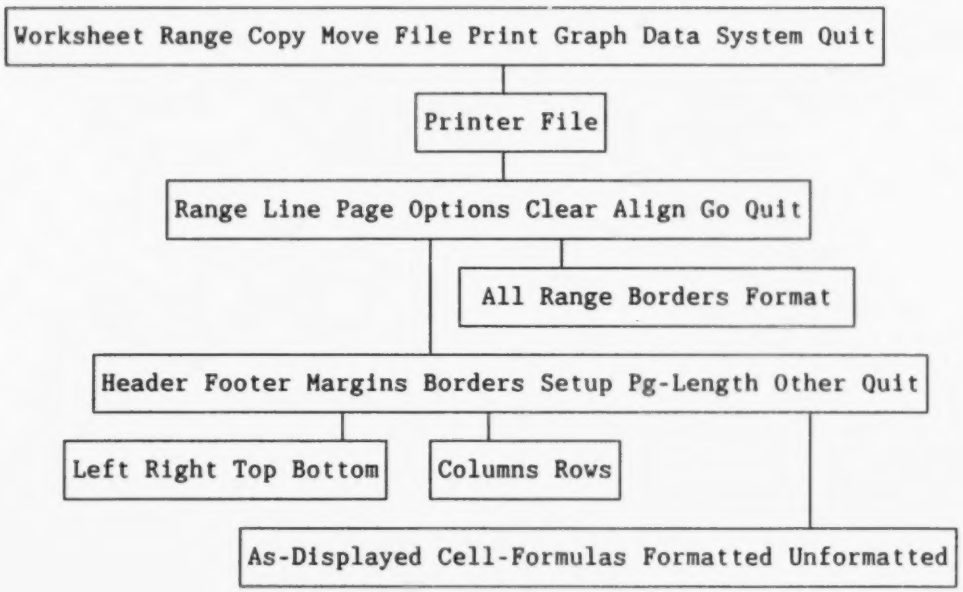
READ: PRINT COMMAND MENU

The /Print commands allow you to obtain a printed copy (called a hard copy) of a worksheet or some range of the worksheet. You can send print output directly to the printer or you can store it in a print file for printing later with 1-2-3 or for use with some other program.

The /Print command offers a host of choices in addition to those mentioned above. You can obtain a quick printout or you can take advantage of several print and page formatting options.

The following diagram illustrates the /Print command structure used by 1-2-3:

PRINT COMMAND MENU

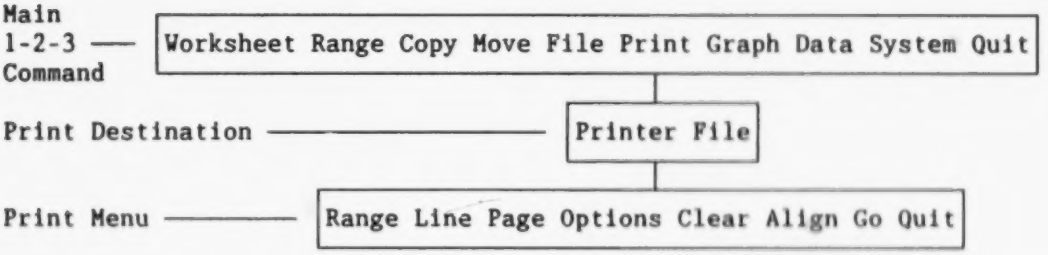

Worksheet Range Copy Move File Print Graph Data System Quit
Printer File
Range Line Page Options Clear Align Go Quit
All Range Borders Format
Header Footer Margins Borders Setup Pg-Length Other Quit
Left Right Top Bottom
Columns Rows
As-Displayed Cell-Formulas Formatted Unformatted

READ: PRINT DESTINATIONS

While it may seem logical that printing can only occur on a printer, there are really two destinations to which a "printed" report may be sent. The first is to the printer and the second

is to a file on the data disk. A "printed" file on the data disk can be printed at a later time using 1-2-3 or by using some other program such as a word processor or database manager.

The most common destination for printing a report is by sending it to the printer for immediate printing. The /P command selects the Print command and by typing P again, the printer output is selected. The Print Menu will continue to stay on the command line as different print options are selected until the Quit option is selected:



Selecting F after invoking the Print command will prepare the program to send the printed report to a file on the disk instead of to the printer. The file that is stored on the disk will represent an electronic version of the file as it would have been printed on paper. 1-2-3 automatically adds the extension .PRN to the print file that you have stored on the disk. The most frequent use of this form of the print command is to use the print file in another program such as a word processor or database manager. You will perform this operation later in this lesson.

READ: DEFAULT PRINT SETTINGS

A formatted report may be printed with no additional inputs other than the command to begin printing. Until now, you have been printing reports in these lessons by using the default print settings. The program has default values for a number of format settings including left, right, top, and bottom margins.

READ: PRINT OPTIONS

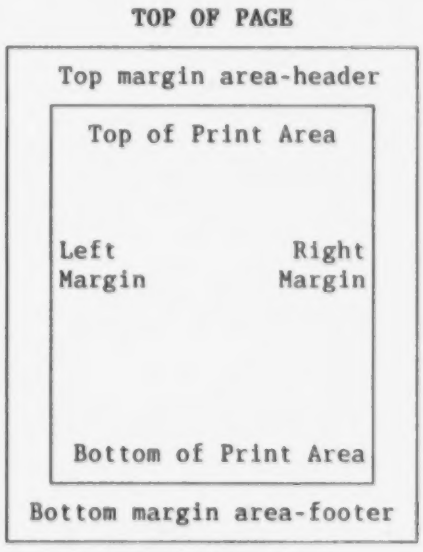
The default values of many of the print options may be changed to meet many different requirements. The Options menu is used to make the necessary changes. Once different options have been selected, they remain in force until changed in the Options menu or until cleared with the Clear command on the Print menu. Options are cleared to the default values of a new worksheet. The selected options are saved with any worksheet and are set automatically when the worksheet is retrieved.

The Options menu is selected from the Print menu by typing O. The menu that appears will remain in place until Q (for Quit Options) or [Esc] is typed. The following selections are available in the options menu:

Command	Function
Header	Allows a page header to be typed and included on every printed page of the report
Footer	Allows a page footer to be typed and included on every printed page of the report
Margins	Allows left, right, top, and bottom margins to be specified
Borders	Allows designated columns and/or rows to appear at the left or top edge of every printed page in addition to the data in the print range
Setup	Allows a setup string of special printer instructions to be defined
Page-Length	Allows the page or form length, in lines, to be defined
Other	Selects additional Option commands such as printing as displayed or printing cell formulas
Quit	Returns to the Print menu

READ: PAGE LAYOUT

The following diagram shows the layout of a single page according to the formatting options provided by 1-2-3:


TOP OF PAGE
Top margin area-header
Top of Print Area
Left Margin
Right Margin
Bottom of Print Area
Bottom margin area-footer
BOTTOM OF PAGE
Two lines between top margin and top of print area
Two lines between bottom margin and bottom of print area

DO: USING THE PRINT SETUP OPTION

Let's use the Setup option to demonstrate how to print a report in compressed or condensed print:

1. Use the **/FR** command to retrieve the file named **SALESYR**.

2. To print a report in condensed mode (as in the case of reports that are wider than an 80 column printer can print), select the print to the printer command, **/PP**.

3. Next select the options menu by typing **O** and then select the setup string input option by typing **S**. If you have an IBM Graphics (Epson) or IBM Proprinter, type **\015** for condensed print and press **<Return>**. (If you have another type of printer your instructor should tell you the ASCII decimal code for condensed print.)

4. Now change the margins to reflect the new print mode. Type **MR** to set a new right margin. Type **136** and press **<Return>**.

5. Change the left margin by typing **ML** and **0** for the new left margin.

6. Type **Q** to leave the Options menu and return to the Print menu.

7. Select a print range to print the whole worksheet and then select **G** for Go to print the worksheet. It should be printed in a condensed print.

   Condensed or compressed print is especially useful when you have wide worksheets to be printed on an 80 column printer.

DO: EXPORTING TO OTHER PROGRAMS (requires dBASE III PLUS)

Let's create a worksheet and use the Print to a File command to export the worksheet to a form that can be used by other programs, in this case, dBASE III PLUS. This operation will also use several of the print options. We will enter a worksheet and transfer the worksheet to a dBASE III PLUS database file.

1. If Lotus 1-2-3 is not active, you should start the program. Enter the following spreadsheet data using the Worksheet, Column-Width (/WCS) command to set the following column widths: A=5, B=25, C=12, D=9. Set two decimal places in the last column with the Range Format (/RFF2 D7.D30) command. Enter a formula to total the check amounts in cell D30 as @SUM(D7.D28):

	A	B	C	D	E
1	Al's Limousine Service				
2	Checks for August, 1985				
3					
4	Check				
5	No.	Description	Category	Amount	
6	---	---	---	---	
7	102	Oscar's Office Supplies	Supplies	58.60	
8	103	Raymond Gunn Security	Security	1100.00	
9	104	S.H. Eister, Atty.	Legal	600.00	
10	105	Eternal Gas and Elec.	Utility	185.60	
11	106	Al Fixit	Payroll	650.00	
12	107	Lynn Rental	Payroll	575.00	
13	108	Sue Secretary	Payroll	435.00	
14	109	Ding Dong Bell	Telephone	385.45	
15	110	Auto World Weekly	Advertising	650.00	
16	111	Auto Mechanics, Inc.	Maintenance	837.50	
17	112	Oscar's Office Supplies	Supplies	120.56	
18	113	Sue Themfirst, Atty.	Legal	275.00	
19	114	Rent-All Property Mngmt.	Rent	1500.00	
20	115	Car-Search Monthly	Advertising	450.00	
21	116	Clean-Up Office Serv.	Maintenance	300.00	
22	117	Fill-Er-Up Stations	Fuel and Oil	175.00	
23	118	Joe Programmer	Consulting	300.00	
24	119	Fill-Er-Up Stations	Fuel and Oil	195.00	
25	120	Al Fixit	Payroll	650.00	
26	121	Lynn Rental	Payroll	575.00	
27	122	Sue Secretary	Payroll	435.00	
28	123	Joe Programmer	Consulting	300.00	
29	---	---	---	---	
30		TOTAL FOR MONTH			
31				========	

2. After you have completed the worksheet, save it in a file named CHECKS:

   Type: **/FS CHECKS**

3. Now print the worksheet to the printer:

   Type: **/PP**

4. Set the print range to include the complete worksheet and then quit the print to printer function:

   Type: **R A1.D31 <Return>**

   Type: **G**

   Type: **Q**

5. Now print the worksheet to a text file named CHECKS (Lotus 1-2-3 will automatically add the extension, .PRN):

   Type: **/PF CHECKS**

6. Set the print range to include only the check data (no titles, headings, or totals):

   Type: **R A7.D28 <Return>**

7. Reset the left and top margin options to zero:

   Type: **OML 0 <Return>**

   Type: **MT 0 <Return>**

8. Reset header and footer options by removing all reserved header and footer space and then quit the options:

   Type: **OU**

   Type: **Q**

9. Now, print the file to a text file on the disk and then quit the print to a file function:

   Type: **G**

   Type: **Q**

10. You now have a text file stored on the disk which can be accessed by dBASE III PLUS. Exit Lotus 1-2-3:

    Type: **/QY**

    Type: **EY**

11. Start the dBASE III PLUS program by placing dBASE III PLUS System Disk 1 in Drive A and typing dBASE at the A>. When you are prompted, remove System Disk 1 and replace it with System Disk 2 and press <Return>.

12. When the dBASE Assist Menu appears on the screen, press **[Esc]** to obtain the dot prompt. Your screen should be cleared and the cursor should be blinking beside a dot.

13. Set the default data drive to Drive B by typing the following command at the dot prompt:

    SET DEFAULT TO B: <Return>

14. Set the editing menus on by typing the following command at the dot prompt:

    SET MENUS ON **<Return>**

15. Now create a database to which the text file, CHECKS.PRN can be input by typing the following command at the dot prompt:

    CREATE CHECKS **<Return>**

    Use the following information for the database structure:

Field Name	Type	Width	Decimals
CHECK_NO	N	5	
DESC	C	25	
CATEGORY	C	12	
AMOUNT	N	9	2

    Notice that the database widths match the widths of the columns in the worksheet.

    Upon completion of filling in the database structure (your instructor or lab assistant will help you) press **<Return>** with no field name. At the prompt, **Input data now Y/N?**, type **N**.

16. Now make CHECKS the active database file by typing the following command at the dot prompt:

    USE CHECKS **<Return>**

17. To input the text file into the database, type the following command at the dot prompt:

    APPEND FROM CHECKS.PRN SDF **<Return>**

    The program will then transfer the data from the Lotus file to the dBASE III PLUS database file.

18. Now obtain a list of the data in your database file by typing the following command at the dot prompt:

    LIST TO PRINT **<Return>**

19. After you have obtained a print, you may quit dBASE III PLUS and complete this operation by typing the following command at the dot prompt:

    QUIT **<Return>**

EXERCISES

(1) Print the Stock Investment Summary, STOCKINV, using condensed print.

CASE STUDY: DAILY INVENTORY

You are responsible for keeping track of quantities of items currently in inventory and printing a report showing the value of the inventory and which items need to be reordered.

You have determined that the easiest way to accomplish this is to use a spreadsheet program to input the daily sales and receipts of the inventory and then allow the program to calculate the value of the inventory and which items need to be reordered. Additionally, you have determined that you should be able to extract data from the previous day's inventory to use for the beginning amounts on the next day's inventory.

1. Create a worksheet template like the following for keeping your daily inventory:

DAILY INVENTORY Jan. 1, 1989

Item Number	Reorder Qty	Cost/ Case	Cases Rec'd	Cases Sold	Cases On Hand	Total Cases	Total Cost	Reorder Time
100	15	6.35						
200	10	12.55						
300	35	12.75						
400	10	3.35						
500	20	8.75						
600	5	3.15						
700	25	9.55						
800	30	21.25						
900	20	25.75						
TOTAL COST								

2. Enter formulas for the following columns, save the worksheet as INVENT, and obtain a print of the worksheet template using condensed mode:

   Total Cases = Cases Received + Cases On Hand - Cases Sold
   Total Cost = Total Cases * Cost Per Case
   Reorder Time = IF Total Cases < Reorder Qty THEN "YES" ELSE "NO"
   SUM the Total Cost column

3. Now enter the initial inventory transactions for Jan. 3, 1989, and obtain a print using condensed mode:

Item Number	Cases Rec'd	Cases Sold
400	20	5
100	20	2
700	30	5
200	12	8
500	10	1
800	30	9
600	3	1
300	5	4
900	5	2

4. Name the Total Cases column as TOTCASES. Name the Cases Rec'd and Cases Sold columns as RECDSOLD.

5. Prepare the worksheet for the next day's processing by extracting TOTCASES, combining TOTCASES to Cases on Hand, and erasing RECDSOLD.

6. Now enter the inventory transactions for Jan. 4, 1989, and obtain a print using condensed mode:

Item Number	Cases Rec'd	Cases Sold
400		10
100		5
700		15
200	10	
500	20	
800		10
600	25	
300	30	
900	25	

7. Repeat Step 5 and enter inventory transactions for Jan. 5, 1989, and obtain a print using condensed mode:

Item Number	Cases Rec'd	Cases Sold
400	10	
700	20	
200		5
500		10
800	40	
600		6
300	20	
900		5

CASE STUDY: BUDGET REDUCTION EXERCISE

Assume that you're managing the budget shown on the next page for a non-profit, fund-raising organization and that you are responsible for making up a new budget that is $20,000 less than the current budget. The new budget total, $435,536 appears in the bottom right hand corner of the worksheet (see memo on next page).

It is now September. The 9 MONTH EXP. shows what you have already spent this year. The PROJ. 12 MONTH EXP. refers to what would be spent during the year if things continue during the last three months as they did in September. Thus, actual expenditures for nine months must be translated into a twelve month projection. To compute the projected twelve month expenses use the formula:

(SEPT. EXP. * 3) + 9 MONTH EXP. = PROJ. 12 MONTH EXP.

This formula uses the September expense as the best guess for what will be spent in October, November, and December in order to determine what will be spent by the end of the year, if things go as they did in September. Put this formula in the top of the PROJ. 12 MONTH EXP. column and copy it down the entire column.

The OVER/UNDER column should contain the difference between the CURRENT BUDGET and PROJ 12 MON EXP columns (current - projected). This will give you an idea of where you will go over budget and which budget items need to change. Enter this formula in the top cell and copy it down.

The NEW BUDGET column has to sum to $435,536. The projected salaries on the top half of the table should probably become the new budget figures. The same is true of the retirement benefits and the insurance since both are related to commitments you made to your employees. It is, however, entirely possible to freeze all travel, equipment, telephone, and supply purchases at the nine month level. Remember that you can't make the new budget levels lower than the nine month expenses since this money has already been spent. Note that the September expenses are included in the nine month expenses. September expenses are just given to show you how much you are currently spending per month. You must find your $20,000 in the remaining three months expenses.

(1) Complete the worksheet and then go back and try sample budget amounts.
(2) What you enter in the new budget column is entirely up to you. It can be numbers or formulas.
(3) Obtain 2 prints of the worksheet:
    a. the completed worksheet as-displayed
    b. the completed worksheet cell formulas

As a second part of this exercise, you are to justify the cuts you have made in the budget by writing a paragraph or two explaining what you did and why using a word processing program. This should be written in a memo to your boss, Robert Anderson. The memo should include a memo heading, a print of your budget reduction worksheet, and the paragraphs explaining your reasoning for the reductions.

(1) Output your worksheet unformatted to a disk file (extension .PRN)
(2) Prepare your memo using your choice of a word processing program and load it into your memo file at the appropriate position in your memo.
(3) Print your completed memo which includes the completed budget reduction worksheet and your explanations of the budget cuts.

Sample memo with unfinished worksheet:

MEMO TO: Robert Anderson FROM: Your Name

SUBJECT: New Budget Projections

Please find below the budget projections per your request:

	CURRENT BUDGET	SEPT. EXP.	9 MONTH EXP.	PROJ. 12 MONTH EXP.	OVER/ UNDER	NEW BUDGET
SALARIES						
Williams, J.	47,890	3,991	35,918			
Jones, B.	41,567	3,463	31,175			
Smith, R.	39,876	3,323	29,907			
Adams, K.	34,900	2,900	26,100			
Brown, N.	34,500	2,900	26,100			
Jackson, A.	30,800	2,900	26,100			
Johnson, J.	24,500	0	2,050			
Andrews, S.	22,000	1,833	16,500			
Taylor, P.	20,670	1,723	15,503			
Hill, K.	19,999	1,667	14,999			
Donald, B.	18,900	1,575	14,175			
Quinn, C.	12,300	1,025	9,225			
Total Salaries	347,902	27,300	247,752			
Retirement	48,358	3,795	34,437			
Insurance	14,376	1,098	9,983			
Supplies	9,000	1,200	9,100			
Telephones	4,500	900	3,700			
Travel	6,900	1,380	5,400			
Equipment	24,500	2,250	21,100			
Totals	455,536	37,923	331,472			435,536

The reasons I have made the reductions are . . . . .

LESSON 15

TABLE LOOKUP AND SPECIAL FUNCTIONS

OBJECTIVES:

* Define tables and table lookups
* Identify special functions and function syntax
* Use a list selection and table lookup in a worksheet
* Create a range name

REQUIRED MATERIALS:

* Paper and pen or pencil
* A DOS diskette
* Lotus 1-2-3 System Disk
* A practice disk
* IBM-PC with 1 or 2 diskette drives or hard disk and printer

READ: TABLE LOOKUP AND OTHER SPECIAL FUNCTIONS

1-2-3 has another category of functions that perform several specialized activities--the most powerful among these being table lookups.

In a table lookup a comparison value is used to determine the end of a scope. When this comparison value is exceeded, a corresponding value is returned as the result of the comparison.

A common use of table lookups would be with tax tables in which the comparison values would be income ranges and the value returned would be a tax rate.

The 1-2-3 table lookup functions are @HLOOKUP and @VLOOKUP. @HLOOKUP sets up a horizontal table (a table that reads across) and @VLOOKUP sets up a vertical table (a table that reads down).

Other 1-2-3 special functions would include functions to return an error value, @ERR; return a not available value, @NA; and perform short table lookups, @CHOOSE.

READ: 1-2-3 SPECIAL FUNCTION REFERENCE

The following list provides an explanation of special 1-2-3 functions and the proper syntax for using the function:

@ERR

The value of the function is ERR (error).
Example: @IF(C1>C2,@ERR,C1)

The error value (ERR) is returned if the value of cell C1 is greater than the value of cell C2. Otherwise, the value of cell C1 is returned.

@NA

The value of the function is NA (not available).
Example: @IF(C1>C2,@NA,C1)

The not available value (NA) is returned if the value of cell C1 is greater than the value of cell C2. Otherwise the value of cell C1 is returned.

@CHOOSE(a,V0,V1,...Vn)

Performs a selection of lookup from a list of values.

The first argument, a, is evaluated and converted to an integer. If this integer value is less than 0 or greater than n, the function returns the result, ERR. Otherwise, the a indicates which value in the list @CHOOSE should select. The first value in the list is 0; therefore, if a is 1, @CHOOSE selects the second value in the list.

You can have as many values in the list as you want, as long as the list does not exceed 240 characters per cell. The values can be either string or numeric, and you can mix different types in a single list.

Examples: @CHOOSE(5,"A","B",3,"C",6,11,13)

The value of this function is 11.

@CHOOSE(A2,B4,B5,B6,B7,B8)

If the value of A2 is 3, the function returns the value of cell B7.

@HLOOKUP(x,table range,offset)

The @HLOOKUP function performs a horizontal table lookup. The comparison values are the first row in the table. These comparison values must be in increasing order, with no duplicates. The result of the function is determined by locating the first comparison value in the table which exceeds the test value, x. The result is the value of the cell below the previous comparison value in the table range. The third argument, offset, determines how many rows below the comparison row to look. ERR will result if the value of the offset is negative or greater than or equal to the number of rows in the table.

Example: @HLOOKUP(28,A3..D4,1) = 200
@HLOOKUP(A1,A3..D4,B1) = 150

	A	B	C	D	E
1	22	1			
2					
3	15	20	25	30	
4	100	150	200	250	
5					

@VLOOKUP(x,table range,offset)

The @VLOOKUP function performs a vertical table lookup. The comparison values are the first column in the table. These comparison values must be in increasing order, with no duplicates. The result of the function is determined by locating the first comparison value in the table which exceeds the test value, x. The result is the value of the cell to the right of the previous comparison value in the table range. The third argument, offset, determines how many columns to the right of the comparison column to look. ERR will result if the value of the offset is negative, or is greater than or equal to the number of columns in the table.

Example: @VLOOKUP(28,C2..D5,1) = 200
@HLOOKUP(A1,C2..D5,B1) = 150

	A	B	C	D	E
1	22	1			
2			15	100	
3			20	150	
4			25	200	
5			30	250	

DO: STARTING 1-2-3

Start 1-2-3 using the appropriate Lotus 1-2-3 start-up procedure.

DO: LOAD THE WORKSHEET

We are going to use a previously completed worksheet to demonstrate the use of special functions. Load the worksheet, SALES, using the /File Retrieve command.

DO: SETTING UP A LIST SELECTION

We will use the worksheet, SALES, to demonstrate the use of the @CHOOSE function to select a value from a list.

Let's say that instead of two bonus rates we actually have three bonus rates. Rate 1 of 12% is for sales less then 10000; rate 2 of 15% is for sales of 10000 to 12000; and rate 3 of 18% is for sales equal to or greater than 12000. This would cause the calculation to go beyond the scope of a logical formula, so we must use a lookup table. Now, set up a lookup table to describe these bonus ranges:

1. Move the pointer to cell B11 and type 1 for Rate 1 since sales are less than 10000.

2. Move the pointer to cell C11 and type 2 for Rate 2 since sales are in the range of 10000 to 12000.

3. Move the pointer to cell D11 and type 1 for Rate 1 since sales are less than 10000.

4. Move the pointer to cell E11 and type 3 since sales are greater than 12000 and press **<Return>**.

   We have now set up the comparison values for the list selection.

   Your comparison values should look like this on the screen:

E11: 3

	A	B	C	D	E	F	G
10	TOTAL	8000	11000	8000	13000	40000	100
11		1	2	1	3		
12	BONUS	960	1980	960	2340		
13							

5. Enter a new formula to calculate commissions using these three rates. Move the pointer to cell B12 and type this formula using the @CHOOSE function:

   +B10*@CHOOSE(B11,0,.12,.15,.18)

   This formula multiplies the value of cell B10 by the corresponding bonus percentage rate. If there were no rate listed in row 11, the corresponding bonus percentage rate and bonus amount would be 0.

6. Now use the /Copy procedure to copy the formula across for all regions.

   Your worksheet should look like this on the screen:

B12: **+B10*@CHOOSE(B11,0,.12,.15,.18)**

	A	B	C	D	E	F	G
1	REGIONAL SALES ANALYSIS FOR 1985						
2							
3	PRODUCT	NORTH	EAST	SOUTH	WEST	TOTAL	%
4							
5	A	2000	4000	2000	4000	12000	30
6	B	3000	3000	2000	4000	12000	30
7	C	2000	3000	2000	3000	10000	25
8	D	1000	1000	2000	2000	6000	15
9							
10	TOTAL	8000	11000	8000	13000	40000	100
11		1	2	1	3		
12	BONUS	[960]	1650	960	2340		
13							

DO: SETTING UP A VERTICAL LOOKUP TABLE

Let's repeat this operation using the existing worksheet, SALES, to demonstrate the use of a vertical lookup table. Sometimes vertical lookup tables are easier to understand, although this example could use either a vertical or horizontal table.

Let's say that instead of two bonus rates we actually have three bonus rates--less then 10000 is 12%, 10000 to 12000 is 15%, and equal to or greater than 12000 is 18%. This would cause the calculation to go beyond the scope of a logical formula, so we might use a selection list:

1. Load the worksheet SALES without saving the version you just completed using the @CHOOSE function. This will clear memory and load the worksheet as it was previous to the preceding operation.

2. Move the pointer to cell A14 and type **0**.

3. Move the pointer to cell A15 and type **10000**.

4. Move the pointer to cell A16 and type **12000**.

   We have now set up the comparison values of the vertical lookup table.

5. Move the pointer to cell B14 and type **.12**.

6. Move the pointer to cell B15 and type **.15**.

7. Move the pointer to cell B16 and type **.18** and press **<Return>**.

   Your lookup table should look like this on the screen:

```
B16:  .18

      A          B          C          D          E          F          G
10    TOTAL      8000       11000      8000       13000      40000      100
11
12    BONUS      960        1980       960        2340
13
14          0    0.12
15      10000    0.15
16      12000  [ 0.18]
```

8. Now enter the formula. Move the pointer to cell B12 and type the formula using the vertical table lookup function:

   +B10*@VLOOKUP(B10,A14..B16,1)

   This formula multiplies the value of cell B10 by the corresponding bonus percentage rate in the lookup table. Notice that the table range is entered with the $ (dollar signs). The table range is an absolute cell address. The

table is always in the same place! So when you copy this formula across in the next step, you do not want the cell addresses of the table range automatically adjusted as relative cell addresses.

9. Now use the /Copy procedure to copy the formula across for all regions.

   Your worksheet should look like this on the screen:

```
B12:  +B10*@VLOOKUP(B10,$A$14..$B$16,1)
```

	A	B	C	D	E	F	G
1	REGIONAL SALES ANALYSIS FOR 1985						
2							
3	PRODUCT	NORTH	EAST	SOUTH	WEST	TOTAL	%
4							
5	A	2000	4000	2000	4000	12000	30
6	B	3000	3000	2000	4000	12000	30
7	C	2000	3000	2000	3000	10000	25
8	D	1000	1000	2000	2000	6000	15
9							
10	TOTAL	8000	11000	8000	13000	40000	100
11							
12	BONUS	[960]	1650	960	2340		
13							
14	0	0.12					
15	10000	0.15					
16	12000	0.18					

DO: CREATING A RANGE NAME

When using tables, it is often more convenient to refer to the range of cells occupied by the table by a name instead of using the cell addresses:

1. Move the pointer to the beginning of the table, cell A14.

2. Press the / to invoke the command menu.

3. Move the pointer to Range and press **<Return>**.

4. Move the pointer to Name and press **<Return>**.

5. Move the pointer to Create and press **<Return>**.

6. 1-2-3 prompts you to enter a name. You may use any name up to 14 characters. Type the range name, **BONUSRATE**.

7. Expand the pointer to highlight the range B14..C16 and press <Return>.

8. Now move the pointer to cell B12 and change the formula to read:

```
+B10*@VLOOKUP(B10,$BONUSRATE,1)
```

   Since the table is an absolute range, it is preceded by a $ (dollar sign).

9. Now /Copy this formula to cells C12..E12.

   Notice that naming a range greatly simplifies complex formulas. Use the /Range Name command often to name ranges of cells to which you frequently refer.

DO: SAVING THE WORKSHEET WITH THE NEW FORMULAS

Now save the worksheet using /File Save SALES Replace command.

DO: PRINT THE WORKSHEET

Print the worksheet using the /Print Printer Range A1..G16 <Return> Go commands.

EXERCISES

CASE STUDY: DR. MICHAELS' MICROS CLASS GRADES

Grades are awarded in Dr. Michaels' college microcomputer class based on the number of points each student earns on four lab projects, a midterm exam, and a final exam.

You are to complete the class roster template by entering the formulas for the TOTAL column and the formulas for the rows labeled MINIMUM, MAXIMUM, AVERAGE, 90% CURVE, 80% CURVE, 70% CURVE, and 60% CURVE. For example, a 90% CURVE should be calculated as .9 times the highest student score.

You will find it much quicker to complete this assignment if you use the COPY command wisely, rather than typing in similar formulas in many different cells.

Samples of the file as it exists and how it should appear when completed can be found on the following page. Use these instructions:

A. Properly adjust numeric formatting. All numbers should be printed with zero decimal places.
B. Properly adjust label formatting. Headings over columns of numbers should be right adjusted while headings over columns of labels should be left-adjusted.
C. Properly adjust columns widths to allow plenty of room for all cell entries. However, prevent too much space between columns.
D. Use the /Copy command to repeat formulas.
E. Use the /Range Name to name the lookup table.
F. Save the completed worksheet as MICROS.
G. Obtain a hard copy of the completed project.

(1) You are to print out the final version of the class list with the proper calculations.

(2) Add a new column to the class roster labeled "Grade." Then calculate the final letter grades for each student using a grade look-up table according to the following grade ranges. Obtain a print out of the class list with the letter grades. Include the lookup table on the print out.

Final Grade	Points Earned
A	211 +
B	187-210
C	164-186
D	140-163
F	below 140

STUDENT AND GRADE DATA FOR DR. MICHAELS' COMPUTER CLASS:

CS 103 -- Microcomputer Applications
Instructor: Dr. Mike Michaels

Name	Student #	Assignments 1	2	3	4	Mid-term	Final	Total
Albert, U.	566-67-6216	7	15	8	5	64	120	0
Alexander, H.	550-61-0229	7	15	5		69	99	0
Arthur, B.	540-90-6114		15	4	8	57	78	0
Ashley, V.	544-66-7451	8	15	8	9	90	89	0
Biggers, C.	542-76-0819	7	15	6	12	49	74	0
Collins, R.	571-84-4978	10	14	10	11	54	115	0
Clark, M.	544-74-8717	3	15	7	8	81	102	0
Davis, A.	247-27-5245	9	15	4	6	80	99	0
Donaldson, B.	542-76-0826		15	6	9	83	67	0
Fredericks, B.	536-54-8483	7		9	10	44	95	0
Griffith, S.	574-58-4183	8	15	4	12	81	102	0
Grimley, E.	540-90-7043	10	15	6	7	69	65	0
Higgins, P.	566-67-7513	9	15	2	12	84	84	0
Howard, B.	568-67-7674	5	15	8	11	68	99	0
Ingrams, A.	555-84-6229	8	15	10	10	69	102	0
Jackson, D.	540-06-2981	5	15	8	5	69	78	0
Kidder, M.	541-76-0278	7	15	6	8	78	69	0
Larson, S.	540-80-0013	9	15	9	3	84	85	0
Madison, J.	542-52-7864	8	15	4	9	95	88	0
Marshall, S.	541-92-0594	8	15	10	12	84	66	0
Morrison, W.	543-74-5244	7	15	10	11	41	89	0
Mosley, E.	540-54-7906	10	15	7	8	63	95	0
Peters, D.	436-04-4322	8	15	9	9	78	103	0
Russell, S.	554-98-0069	8	15	4	6	85	116	0
Williams, S.	542-54-9599	8	15	6	12	89	96	0
	Minimum:	0	0	0	0	0	0	0
	Maximum:	0	0	0	0	0	0	0
	Average:	0	0	0	0	0	0	0
	90% Curve:					0	0	0
	80% Curve:					0	0	0
	70% Curve:					0	0	0
	60% Curve:					0	0	0

CASE STUDY: PAYROLL CALCULATION WORKSHEET

Lawson's Supply Center is a merchandising business that sells building materials and other supplies to homeowners and building contractors. Lawson's presently employs nineteen people. All employees are paid on a weekly basis.

You have been hired as a payroll clerk by Lawson's. You report to the supervisor of the accounting department.

(1) As a payroll clerk for Lawson's your job is to compute regular, overtime, and gross earnings for each employee and then determine taxes to be withheld from employee earnings (no other deductions are withheld from employee earnings) and the net pay. You must present a weekly payroll register to your supervisor showing this information so that payroll checks can be drafted from the information on your payroll register. Review the Payroll Calculation and Register Worksheet Template and Tax Tables left by your predecessor. Add columns for Gross Pay, Federal W/H, State W/H, FICA, and Net Pay. Write the appropriate formulas in the spaces provided below for the pay and tax computations for these columns (the Federal W/H formula is provided):

GROSS PAY: _____

FEDERAL W/H: IF(Status=0 THEN Single Tax Table Rate*(Gross Pay*52-No.of Exempt*Fed.Exempt)/52 ELSE Married Tax Table Rate*(Gross Pay*52-No.of Exempt*Fed.Exempt)/52)

NOTE: Single Tax Table Rate=LOOKUP(Gross Pay*52-No. of Exempt * Fed.Exempt, Single Tax Table,offset)

STATE W/H: _____

_____

_____

FICA: _____

NET PAY: _____

(2) Complete the worksheet, save the worksheet as LAWSONS, and submit a print of the Payroll Calculation Register with the pay and taxes for each employee calculated and totals for all pay and tax columns. (Be sure and submit a print with formulas displayed.)

OPTIONAL: Using SIDEWAYS obtain a vertical print of the worksheet (no borders) -- +5 pts.

Hints for using a table lookup and a logical expression:

- Tax tables are based on annual tables; therefore, gross pay must be multiplied by the number of pay periods and the exemptions subtracted before looking up the tax rates in the tables. A lookup table consists of two adjacent rows or columns containing data. The left column of a vertical lookup table (@VLOOKUP) is searched and the adjacent value in the right column of the previous item when the search value is exceeded is returned. For a horizontal lookup table (@HLOOKUP) the top row is searched and the adjacent value in the bottom row of the previous item when the search value is exceeded is returned. The lookup function searches for the last value in the range of numbers that is less than or equal to the search value given. The function assumes that the search range is in ascending order of values.

- The cell formulas which calculate taxes must consist of a logical expression which determines which tax table to use--single or married. The syntax for an IF operation in Lotus 1-2-3 is:

  @IF(expression1,value2,value3)

  If expression 1 is true, value 2 is entered into the cell. If expression 1 is false, value 3 is entered into the cell.

(3) What if all employees were not paid on a weekly basis--let's say some were paid every two weeks and some paid once a month and some paid twice a month. This would greatly affect the calculation for federal and state withholding taxes because tax tables are annual tables; earnings must be projected to an annual basis in order to determine correct tax rates. What changes would you make in the worksheet to allow for multiple pay periods and still calculate taxes correctly.

EXPLAIN: _____

_____

_____

_____

_____

_____

_____

_____

PAYROLL DATA FOR LAWSON'S SUPPLY CENTER:

Payroll Calculation and Register Worksheet for Week Ending: 05/15/85

EMPLOYEE NAME	0=Single 1=Married	NO.OF EXEMPT	HOURLY RATE	REGULAR HOURS	OVERTIME HOURS
Anderson, Scott	0	2	9.65	39.5	
Baker, Stephanie I.	1	0	7.50	36.0	
Carlson, Jeff R.	1	1	9.00	39.0	
Endicott, Douglas A.	1	4	10.35	40.0	3.0
Evans, Marcia L.	0	0	5.75	40.0	8.5
Gentry, Mary Beth	0	4	9.00	37.5	
Kensington, Terry	1	4	9.65	40.0	.5
Mantini, Maria	1	1	8.80	37.5	
Nelson, Joan	1	2	4.20	40.0	6.5
Ramirez, Antonio S.	0	1	6.40	40.0	4.5
Sanders, Nick C.	1	6	8.80	40.0	2.5
Tully, Donald	0	0	4.50	39.5	
Ulrich, Pat K.	1	2	4.50	40.0	2.5
Wong, Harold E.	1	3	7.50	39.0	
Yamamoto, Tamiro	1	3	7.80	38.5	
TOTALS				586.5	28.0

TAX AND OVERTIME RATES AND TABLES

FICA RATE: .0775 FED.EXEMPT: 1000

OVERTIME RATE: 1.5 STATE EXEMPT: 590

PAY PERIODS: 52

PAYROLL TAX TABLES FOR LAWSON'S SUPPLY CENTER:

TABLE1
Federal Withholding Table-Single

Annual Wages	Rate
0	0
1420	.12
4370	.15
9600	.19
15200	.25
22900	.30
28930	.34
34450	.37

TABLE2
Federal Withholding Table-Married

Annual Wages	Rate
0	0
2500	.12
10000	.17
19950	.22
24560	.25
30080	.28
35590	.33
46620	.37

TABLE3
State Withholding Table-Single

Annual Wages	Rate
0	.005
1000	.01
2500	.02
3750	.03
5000	.04
6250	.05
7500	.06
9250	.07
11250	.08
13250	.09
15250	.10

TABLE4
State Withholding Table-Married

Annual Wages	Rate
0	0
2000	.01
5000	.02
7500	.03
9000	.04
10500	.05
12000	.06
13500	.07
15000	.08

LESSON 16

KEYBOARD MACROS

OBJECTIVES:

* Define keyboard macros
* Creating, naming, and executing a macro
* Illustrate macro special key table
* Documenting macros, interactive macros, and Auto-Execute macro
* Describe advanced macro commands
* Identify and describe common macro programming structures
* Create and execute a macro using advanced macros and menus

REQUIRED MATERIALS:

* Paper and pen or pencil
* A DOS diskette
* Lotus 1-2-3 System Disk
* A practice disk
* IBM-PC with 1 or 2 diskette drives or hard disk and printer

READ: KEYBOARD MACROS--THE TYPING ALTERNATIVE

1-2-3 has a facility that allows you to store sequences of keystrokes for future use--during the same session or during a later one. The keystrokes might invoke one or more formatting commands, type entries, create a graph, etc.

A stored sequence of keystrokes is often called a keyboard macro or just simply, macro.

Each macro is "attached" to one of the letter keys--A, B, C,...., Z. When you hold down the [Alt] key and type the letter, 1-2-3 automatically types all the keystrokes stored in the sequence, just as if you had typed them again yourself.

Since this facility allows you to save keystrokes it could be considered to be a typing alternative.

There are many situations in which you will find macros to be useful:

* You need to type the same label many times in a worksheet. For instance, "Revenues" or "1st Quarter" or your company name.

* Automating frequently used 1-2-3 commands.

* You need to perform a certain procedure, involving several commands and/or entries in a particular order. For instance, a macro might produce a printed report consisting of several sections of the worksheet, each with its own margins, character size, line spacing, etc.

* In a worksheet that you are developing for use by non-technical personnel, you wish to use some of 1-2-3's more sophisticated functions. But you can't afford the time to train the personnel in the program's advanced features.

DO: A SIMPLE EXAMPLE

Suppose that one of your 1-2-3 worksheets provides the data for several types of reports. For each report, you wish to adjust the widths of columns A and B in order to produce the best visual effect.

Perform the procedure once manually, noting all the keys you press:

1. Move the pointer to cell **A1**.

2. Use the /Worksheet Column-Width Set command to set the width of column A to **25** characters.

3. Move the pointer one cell to the right, to cell **B1**.

4. Use the /Worksheet Column-Width Set command to set the width of column B to **20** characters.

5. Use the /Worksheet Erase to set the worksheet column widths to the default of **9**.

DO: ENTER THE MACRO

1. Move the pointer to a cell that is out of the way, for instance, cell **X1**.

2. Now record the keystrokes that perform the preceding operation as labels:

(1) At cell X1, type '{goto}A1~

(2) Move to cell X2 and type '/WCS25~{right}

(3) Move to cell X3 and type '/WCS20~

DO: ATTACH THE KEYSTROKE SEQUENCE TO A LETTER KEY

1. Use the /Range Name Create command to create a range.

2. Assign a name consisting of a backslash (\) and then a letter of the alphabet--name the range, \C.

3. Enter the range as the starting cell of the keystroke sequence, X1.

DO: USE THE MACRO

To execute the macro, hold down the [Alt] key and press C. 1-2-3 instantly types the stored keystrokes, changing the respective column-widths to 25 and 20.

READ: CREATING AND NAMING A MACRO

Before creating a macro you should always go through a "dry run." Type the entries and/or command, noting exactly which keys you press. Don't forget to note <<Return>> and <<Space Bar>> key strokes. When you are satisfied that you know precisely which keystrokes are to be saved, find some out-of-the-way cells, in an empty part of the worksheet.

To create a macro:

A. Enter the macro as one or more labels (e.g. preceded by a label-prefix).

B. Assign a special macro range name to the cell in which the keystroke sequence begins.

READ: GUIDELINES FOR ENTERING A MACRO

The following are some guidelines for entering a macro, as well as some rules on macro structure:

* Use a blank area of the worksheet so that the macro does not affect any data that already exists.

* Type the entries for a macro in any column of cells. You can type more than one instruction or command sequence in the same cell.

* The instructions you type in a macro may include any of the standard keyboard characters as well as any of 1-2-3's special keys.

* The instructions in each cell can be as short as a single keystroke, or as long as 240 characters. If the keystroke sequence is very long, divide it into more than one cell in a column to make it easier to read and edit.

* Type all cell entries for a macro in the form of labels. When entering commands (beginning with a /), numbers, or formulas, you must begin the macro entry with a label-prefix character, such as ' (apostrophe).

* Leave the cell below the macro instructions blank so that 1-2-3 does not include any information immediately below the macro as part of the macro's instructions.

READ: KEYSTROKE SEQUENCES

Throughout these lessons command sequences have been shown as a series of command words or letters representing a command word. For example, /WEY (Worksheet Erase Yes) clears the worksheet, while /FRSALES <Return> would retrieve a worksheet file named SALES.

Keystroke sequences are labels, and they are typed as if they were actually being executed as commands. Commands and data are entered using the letters which correspond to the desired keystrokes.

Keys with multiple-character names, such as <Return>, [PgDn], or <Backspace> whose function or action is accomplished with only one keystroke, are entered in macros somewhat differently than regular keystrokes. Each of the special keystrokes are surrounded by brackets to let the program know what actions should be taken.

READ: SPECIAL KEY INDICATORS

You can enter most keystrokes in a macro simply by typing the appropriate key. However, you must type the special keys as they appear in the following table:

MACRO KEY	DESCRIPTION
~	<Return>
{down}	<Down Arrow>
{up}	<Up Arrow>
{left}	<Left Arrow>
{right}	<Right Arrow>
{home}	[Home]
{end}	[End]
{pgup}	[PgUp]
{pgdn}	[PgDn]
{bigleft}	<Shift>[Tab] -- page left
{bigright}	[Tab] -- page right
{bs}	<Backspace>
{esc}	[Esc]
{del}	[Del]
{?}	Pause for manual input
{edit}	F2 [Edit]
{name}	F3 [Name]
{abs}	F4 [Abs]
{goto}	F5 [GoTo]
{window}	F6 [Window]
{query}	F7 [Query]
{table}	F8 [Table]
{calc}	F9 [Calc]
{graph}	F10 [Graph]

DO: SOME MACRO EXAMPLES

In the following examples an operation is described, followed by the appropriate keystroke sequence required to accomplish it. Below each example are two macros, each of which can accomplish the same operation as the keystroke sequence before it.

Perform these steps for each of the following examples:

(1) Read the example to determine what operation you are trying to perform.

(2) Perform the keystrokes starting at the beginning of the worksheet to see how the operation should work. Then clear the worksheet using the /WEY command.

(3) Enter the macro in an unused area of the worksheet, for instance, X1. You may enter the whole macro into one cell as long as it does not exceed 240 characters. Then attach the macro to a keystroke, for instance, /M and execute the macro.

(4) For extra practice, enter the alternative macro and attach it to a different keystroke, for instance, /A and execute the alternative macro.

(5) Clear the worksheet using the /WEY command.

EXAMPLE 1

Enter the labels FIRST, SECOND, THIRD, and FOURTH in four cells and center the labels in the cells. The pointer starts on cell A1:

Keystrokes:	FIRST <Right Arrow> SECOND <Right Arrow> THIRD <Right Arrow> FOURTH [End] <Left Arrow> /RLC [End] <Right Arrow> <Return>
Macro:	FIRST{right}SECOND{right}THIRD{right}FOURTH {end}{left}/RLC{end}{right}~
Alternative Macro:	^FIRST{right}^SECOND{right}^THIRD{right}^FOURTH~

EXAMPLE 2

Name the range C2..C5 as RANGE, then copy it to cells E4..E7. The pointer starts on cell AA255:

Keystrokes:	F5 C2 <Return> /RNC RANGE <Return> <Down Arrow> <Down Arrow> <Down Arrow> <Return> /C. <Down Arrow> <Down Arrow> <Down Arrow> <Return> <Right Arrow> <Right Arrow> <Down Arrow> <Down Arrow> <Return>
Macro:	{goto}C2~/RNCRANGE~{down}{down}{down}~/C.{down} {down}{down}~{right}{right}{down}{down}~
Alternative Macro:	{goto}C2~/RNCRANGE~{down}{down}{down}~/CRANGE~ {right}{right}{down}{down}

DO: A PRINT MACRO

Let's create a macro in the worksheet SALES that will print the worksheet to the printer. Perform the procedure once manually, noting all the keys you press:

1. Load the worksheet SALES: **/FRSALES <Return>**

2. Invoke the print command, set the print range, execute the print command, and quit the print menu: **/PPRA1..G10 <Return> GQ**

3. Move the pointer to a cell that is out of the way, for instance, cell X1.

4. Now record the keystrokes that perform the preceding operation as labels:

   (a) At cell X1, type '/FRSALES~

   (b) Move to cell X2 and type '/PPRA1..G10~GQ

5. Use the /Range Name Create command to create a range.

6. Assign a name consisting of a backslash (\) and then a letter of the alphabet--name the range, \P.

7. Enter the range as the starting cell of the keystroke sequence, X1.

8. To execute the macro, hold down the [Alt] key and press P.

READ: DOCUMENTING A MACRO

If you write a complicated macro, you may want to write a description of the step-by-step instructions for the macro. Type these descriptions in the cells to the right of each keystroke sequence:

	A	B	C	D	E	F
1		20	$20.00			
2		30	$30.00			
3		40	$40.00			
4						
5						
6	\P	{goto}A1~		go to cell A1		
7		/CA1..A3~C1~		copy data from column A to C		
8		/RFC2~C1..C3		format column C ($, 2 decimals)		
9		/PPRC1..C3~GQ		print column C		
10						

Then, if you use this macro again later, or you give it to someone else to use, the purpose of each keystroke will be clear. Make sure that the descriptions are not in the same cells as the macro, so 1-2-3 does not confuse your notes with its macro instructions.

READ: INTERRUPTING A MACRO

To interrupt a macro at any time during execution, press **[Ctrl][Break]**. 1-2-3 returns immediately to **READY** mode and lets you resume your work session.

If an error occurs when you press **[Ctrl][Break]**, press **[Esc]** to cancel the error and return to **READY** mode.

READ: INTERACTIVE MACROS

You can combine macro execution with manual entries. One way to do this is by inserting a pause in the macro instruction sequence. 1-2-3 can pause one or more times for manual entries while it is executing a macro.

The {?} command causes the macro to pause for manual entries. You can enter {?} anywhere in the macro instruction sequence. When 1-2-3 reads a {?} command in the macro, it stops executing the macro until you type something and press <Return>.

When you use the {?} command in the macro instruction sequence, you must complete the cell entry with a ~ character, which instructs 1-2-3 to continue macro execution after you press <Return>. For example, {?}~ .

READ: AUTO-EXECUTE MACRO

An auto-execute macro is a special macro that specifies a task that 1-2-3 implements automatically when you first load the worksheet using the /File Retrieve command. This macro is useful for worksheets that you use often, or that you are preparing for others to use. It is also useful in combination with the auto-loading worksheet feature of 1-2-3 which will automatically retrieve a particular worksheet when you start 1-2-3 (see 1-2-3 Reference Manual under /File Retrieve command).

You can create an auto-execute macro the same way that you create any other macro. However, you give it a special name: \0 (zero). Do not use this name when naming any other macro.

1-2-3 will automatically invoke a macro named \0 when you retrieve the worksheet that contains it. You cannot, however, invoke an auto-execute macro manually during a work session by holding down **[Alt]** and pressing 0. To test or use an auto-execute macro during a 1-2-3 work session, you must assign it an additional macro name, for example, \E.

A worksheet can contain only one auto-execute macro. If you no longer want the auto-execute macro to be invoked automatically, you must either give it a new name, or delete it and its range name from the worksheet.

READ: ADVANCED MACRO COMMANDS

When writing your own macros, you can combine keystrokes with macro commands to accomplish complex tasks. A macro can execute a defined sequence of keystrokes efficiently and quickly. It will repeat this series of keystrokes as many times as the macro itself is executed. However, a simple collection of keystrokes cannot begin to automate the use of a worksheet, control complex manipulations, or make decisions. Nor can it select alternative courses of action, depending on the state of certain conditions.

In addition to its keystroke memory feature, 1-2-3 includes a number of macro commands that create a powerful programming language. You implement each of these special macro commands with a 1-2-3 advanced macro keyword, such as {IF}, {BRANCH}, or {QUIT}.

These commands allow the macros to be more complex and accomplish more intricate operations. They make the macro facility of 1-2-3 look somewhat like a programming language, and possibly a little intimidating to those with little programming background. It is not necessary to ever use macros, either the simple or more complex. Work can be performed very adequately by the 1-2-3 program without the use of macros. However, productive use will be enhanced for those willing to learn and master the macro commands.

READ: MACRO PROGRAMMING STRUCTURES

It is beyond the scope of this lesson to present all the advanced macro programming commands. A few of the common programming structures and commands that can be used will be presented, and then you will practice writing some simple 1-2-3 macro programs:

IF/THEN/ELSE The {IF} command allows comparisons to be made and alternate commands to be implemented, depending on the results of the comparison. The form of the command is:

{IF} [Condition]

The condition stated after the {IF} command is evaluated. If it is true the instructions in the cell after the {IF} command are executed. If the

condition is false, the action is not executed and the macro execution continues with the next cell below that containing the {IF} command.

For example: {IF G1>0}{right}{right}100~

This structure states that if the contents of cell G1 is greater than 0, then move two cells to the right, type 100, and press <Return>.

BRANCH

The {BRANCH} command causes the execution of the macro to pass macro control to the cell which is identified by name. The form of the command is:

{BRANCH location}

1-2-3 immediately begins reading keystrokes at the new location. You can specify a single cell or a range name as the location. Execution continues at the upper left corner cell of location.

This command can be used alone to direct macro execution to other cell locations, but it is most often used as the "then" part of an {IF} command.

For example: {IF G1>0}{BRANCH X25}

This structure states that if the contents of cell G1 is greater than 0, then branch to cell X25 and continue macro execution from that point.

Do not confuse {BRANCH} with the {goto} key. The {goto} key moves the cell pointer while {BRANCH} transfers macro execution to the location you specify.

SUBROUTINES

{routine-name} redirects macro control to the subroutine identified by the range name, {routine-name}. When 1-2-3 encounters a {RETURN} command or a cell that is not a label or string formula, macro execution continues at the point just after the subroutine call.

To call a macro subroutine, you enclose the range name assigned to the subroutines starting cell in braces:

{SUBR1}

1-2-3 immediately begins reading keystrokes and macro commands at the location specified by the range name {SUBR1}.

The {routine-name} location must be a range name assigned to a single cell or a range. Specifying a range does not restrict the size of the subroutine to the size of the range.

Do not use a {routine-name} that is the same as one of the 1-2-3 key names such as CALC. Do not use a cell address as the {routine-name}.

The following example calls the subroutine SUBR1 three times. Each time it changes the width of the current column and assigns the D1 data display format to a column of 10 cells. After each performance of the subroutine, 1-2-3 returns to the \S macro just after the SUBR1 call:

```
\S        {goto}A10~
          {SUBR1}
          {goto}G10~
          {SUBR1}
          {goto}L10~
          {SUBR1}
          {goto}X99~All done!!~

SUBR1     /WCS25~
          /RFD1{down 9}~
          {RETURN}
```

INPUTS

In addition to input using the {?} as described previously in the lesson in the section, INTERACTIVE MACROS, there are several alternative forms of input commands which cause the macro to pause and accept input from the keyboard.

{GETLABEL,prompt-string,location} pauses for you to type a character string, then stores it as a label entry at location. {GETNUMBER,prompt-string,location} pauses for you to type a number, then stores it as a number entry at location.

The practical limit on the length of prompt-string is the amount of room on the control panel. If you type a long response, the characters scroll off to the left of the control panel.

When 1-2-3 encounters a {GETLABEL} or {GETNUMBER} command, it displays the prompt-string on the

control panel, and then pauses. You can type up to 80 characters, ending with <Return>.

With {GETLABEL} 1-2-3 stores the character string as a left-aligned label at the location cell. With {GETNUMBER} you can type any numeric entry--number formula, or range name containing numeric values. If you type a label or a non-numeric formula with {GETNUMBER}, 1-2-3 places ERR in the location cell.

The /L macro prompts you to type your first and last names, then enters them in the specified ranges:

```
/L    {GETLABEL "Enter your first name: ",FIRST}~
      {GETLABEL "Enter your last name: ",LAST}~

FIRST      Oscar
LAST       Ogilvie
```

The /N macro prompts you to type a number, and then tests the value entered:

```
/N         {GETNUMBER "Enter your age: ",AGE}~
           {IF AGE<=39}{NOWAY}
           {goto}A1^WOW!!~

NOWAY      {GETNUMBER "Try again! ",AGE}~
           {IF AGE=39}{BRANCH NOWAY}
           {RETURN}

AGE
```

MENUS

The {MENUBRANCH location} and {MENUCALL location} commands permit worksheets to be designed that can be operated by menu choices similar to the way 1-2-3 commands are used. This allows inexperienced users to operate the worksheet and produce results without having to become 1-2-3 experts. The success of this approach is very dependent on the skills of the worksheet designer. Not only should the entire worksheet be designed and laid out well, but the flow through the worksheet should be logical and errorless. The menus which are built into the worksheet should carry the user through every logical step needed to complete the worksheet task.

The {MENUBRANCH location} command halts execution temporarily to let you select a menu item, then branches accordingly in much the same way as {BRANCH}. The {MENUCALL location} halts execution temporarily to let you select a menu item and executes the corresponding macro as a subroutine in much the same way as enclosing a subroutine name in braces.

{MENUBRANCH} and {MENUCALL} differ in what happens after 1-2-3 executes the last command in the column containing the menu item. Following a {MENUBRANCH} command 1-2-3 ends the macro after the last command in the column. Following a {MENUCALL} command 1-2-3 continues macro execution immediately after the {MENUCALL} command.

To construct a macro menu:

(1) Place each menu item in a separate cell in the first row of the menu range. Blank cells are not allowed between menu items. You can include up to eight items in the menu. Keep the total number of characters small to avoid extending beyond the screen. The cell to the right of the final menu item must be blank.
(2) Supply brief descriptions (they must be labels) for each menu item in the second row of the menu range. To create a blank label as a description, use a label that consists only of spaces.
(3) Enter the macro instructions for each menu item in the cells below the menu descriptions.

Keep the following rules in mind:

A. Begin each menu item with a different character so that you can select items by typing the first character. Otherwise, 1-2-3 will select the first entry, reading from left to right, whose first character matches the character you type.
B. Uppercase and lower case letters are equivalent when making a menu selection. For example, you can select Quit by typing q or Q.
C. You can always select a menu item by moving the highlight and pressing <Return>.

If you press [Esc] at a {MENUBRANCH} or {MENUCALL} menu, 1-2-3 cancels the menu selection process. Execution continues just after the macro command. This is the same point to which control returns after a {MENUCALL}.

The \M macro has you choose between Add, Edit, and Quit. If you select Add or Edit, the macro branches to a location in the worksheet where you can perform the necessary tasks. If you select Quit, the macro ends. If you press [Esc] instead of selecting one of these items, macro execution continues at the cell below the {MENUBRANCH} command. Otherwise, 1-2-3 never executes this command:

```
\M          {MENUBRANCH TOPMENU}
            {goto}G45~

TOPMENU     Add             Edit            Quit
            Add an entry    Edit entries    End
            {BRANCH G20}    {BRANCH H20}    {QUIT}
```

When it executes the {MENUBRANCH} command, 1-2-3 displays the menu that begins at cell TOPMENU on the control panel:

```
Add             Edit            Quit  (menu items)

Add an entry                    (menu description)
```

As you move the menu pointer among the items, the menu descriptions Edit entries and End comes into view. You can select an item by pressing the first character of a menu item or by highlighting a menu item and pressing <Return>. Depending on the item, the program continues execution with one of the commands {BRANCH G20}, {BRANCH H20}, or {QUIT}.

If the first line of the \M macro had read {MENUCALL TOPMENU} instead of {MENUBRANCH TOPMENU}, control would automatically go to {goto}G45~ after 1-2-3 executes one of the {BRANCH} commands.

DO: CREATE AND EXECUTE A MACRO USING ADVANCED MACROS AND MENUS

Let's use a worksheet we created in the Beginning lessons named BIRTHDAY and write a macro that will control the input and printing of the worksheet. In fact, let's go so far as to make it an auto-execute macro that will control the worksheet when it is loaded.

The BIRTHDAY worksheet calculated a person's age in terms of days, months, and years from their date of birth to today's date. The only input for the worksheet is to input a date of birth. The formulas that calculate the age are already defined in the worksheet.

You are going to make a macro with a menu with three functions on it: (1) Enter a birth date; (2) Print the worksheet; and, (3) Clear the worksheet area and return to 1-2-3. Then you are going to write procedures that will let you perform each of those three functions. Since this will be an auto-execute macro, you will name it /0 :

1. Load the worksheet, **BIRTHDATE**, into the worksheet area. Your screen should look something like the following:

	A	B	C	D	E	F	G
1	BIRTHDAY ANALYSIS WORKSHEET						
2							
3	Today's Date:		[10-Jun-86]				
4	My Birthday:		13-Oct-53				
5							
6	Age in Years:		32				
7	Age in Months:		380				
8	Age in Days:		11928				
9							
10							

2. Erase your current entry in cell C4 by typing, **/REC4..C4 <Return>**.

3. Now move to cell **A25** to begin the macro and type **'\0**.

4. Type the macro as shown in the following example:

```
     A          B          C          D          E          F          G
21 '\O          {MENUBRANCH MENU}
22
23  MENU        Enter      Print      Quit
24              Enter birPrint workEnd program
25              {ENTER}    {PRINT}    {STOP}
26
27  ENTER       {GETNUMBER "Enter two-digit YEAR of birth: ",D4}~
28              {GETNUMBER "Enter two-digit MONTH of birth: ",E4}~
29              {GETNUMBER "Enter two-digit DAY of birth: ",F4}~
30              {goto}C4~@DATE(D4,E4,F4)~
31              {home}
32              {calc}
33              {MENUBRANCH MENU}
34
35  PRINT       '/PPRA1..C8~AGQ
36              {MENUBRANCH MENU}
37
38  STOP        '/WEY~
```

In cell B24 the description for the menu item Enter is:

Enter birth date

In cell C24 the description for the menu item Print is:

Print worksheet

5. To complete the macro, enter the following Range Names and ranges:

Range Name	Range
\O	B21
MENU	B23
ENTER	B27
PRINT	B35
STOP	B38

6. Save the worksheet, and then execute the worksheet by loading the worksheet using the /FR command.

7. If the macro does not work correctly, you may interrupt execution by pressing the **[Esc]** key. You may also find it beneficial to test the macro by creating a Range Name using some other name such as, \M, to first test the macro.

READ: ADVANCED MACRO GRAMMAR

Incorrect macro commands result in an error when you invoke the macro, not when you compose it. The following are 1-2-3's rules of grammar for advanced macro commands:

A. You must create advanced macro commands as label entries or string-values formulas (a formula that generates a label).
B. Each command must begin with a left brace ({) characters followed by a macro command keyword.
C. Following the keyword, type a single space character, then one or more arguments. Each argument must be the correct type--number, string, or location (cell address or range). Some macro commands require more than one type of argument. Others require no arguments at all.
D. The two valid argument separators are the comma (,) and the semicolon (;). The comma is the default configuration for the argument separator; however, the semicolon is always valid no matter what the default configuration is. Don't leave any space characters before or after an argument separator.
E. Each command must end with a right brace (}) character. The entire macro command must be within a single cell. You cannot have the beginning brace in one cell and the ending brace in another.
F. You can store any number of macro commands in a single cell, as long as you do not enter more than 240 characters. You can mix advanced macro commands with individual keystrokes in the same cell.

EXERCISES

(1) Create a macro library for each of the following operations. Start with a clear worksheet. Move the pointer to cell A1. Then begin entering the macros as described below. Position the macros at various locations on the worksheet. Use a three-column format for each macro that consists of the macro name in the first column, the macro commands in the next column, and an explanation of the command in the third column. Name each macro and move to an unused part of the worksheet and test each macro.

Create the following macros:

\Y This macro will automatically enter month labels (three letter abbreviations, eg. JAN, FEB) at the heads of 12 columns and then center the range with the headings.

\P This macro will automatically print a range named, P1, in either condensed or regular mode by prompting the user to enter a code (such as C) for condensed print.

\D This macro will mark the worksheet with the current date in cell A1 and format the date to D1 format. Column width must be greater than 9 to display the date.

(2) Use the Daily Inventory worksheet from Lesson 14 named, INVENT, and automate the updating of the daily inventory by creating a macro that will allow for inputting of daily inventory transactions and then perform Steps 5 and 6 of the Case Study.

Your macro should work as follows:

A. Extract TOTCASES
B. Combine TOTCASES to Cases on Hand
C. Erase RECDSOLD
D. Enter the inventory transactions
E. Print the worksheet using condensed mode

Use the following inventory transactions for Jan. 6, 1987:

Item Number	Cases Rec'd	Cases Sold
200		15
300		18
400		10
500	20	
600		25
700		15
800		10
900	25	

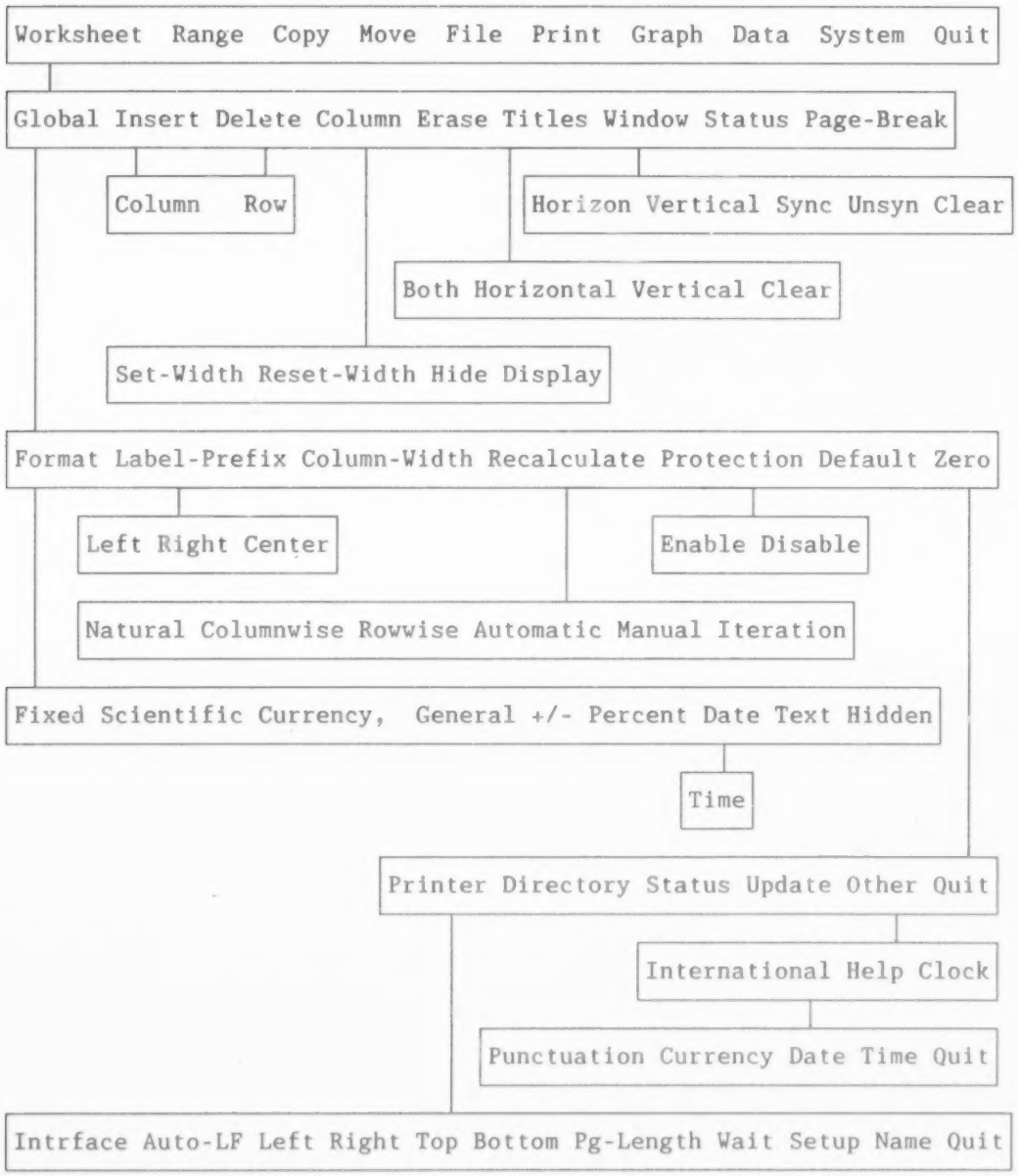
UNIT TEST--Lesson 12

Name: _____ Date: _____

SHORT ANSWER

From the command menu below, write the command to perform the following operations (6 pts. each):

WORKSHEET COMMAND MENU


Worksheet Range Copy Move File Print Graph Data System Quit
Global Insert Delete Column Erase Titles Window Status Page-Break
Column Row
Horizon Vertical Sync Unsyn Clear
Both Horizontal Vertical Clear
Set-Width Reset-Width Hide Display
Format Label-Prefix Column-Width Recalculate Protection Default Zero
Left Right Center
Enable Disable
Natural Columnwise Rowwise Automatic Manual Iteration
Fixed Scientific Currency, General +/- Percent Date Text Hidden
Time
Printer Directory Status Update Other Quit
International Help Clock
Punctuation Currency Date Time Quit
Intrface Auto-LF Left Right Top Bottom Pg-Length Wait Setup Name Quit

UNIT TEST--Lesson 12 Continued

Example: Display the worksheet default status: /WGDS

(1) Enable global protection of cells on the worksheet: _____

(2) Set recalculation order to manual: _____

(3) Set both horizontal and vertical titles at the pointer position:

_____

(4) Split the screen horizontally at the pointer position: _____

_____

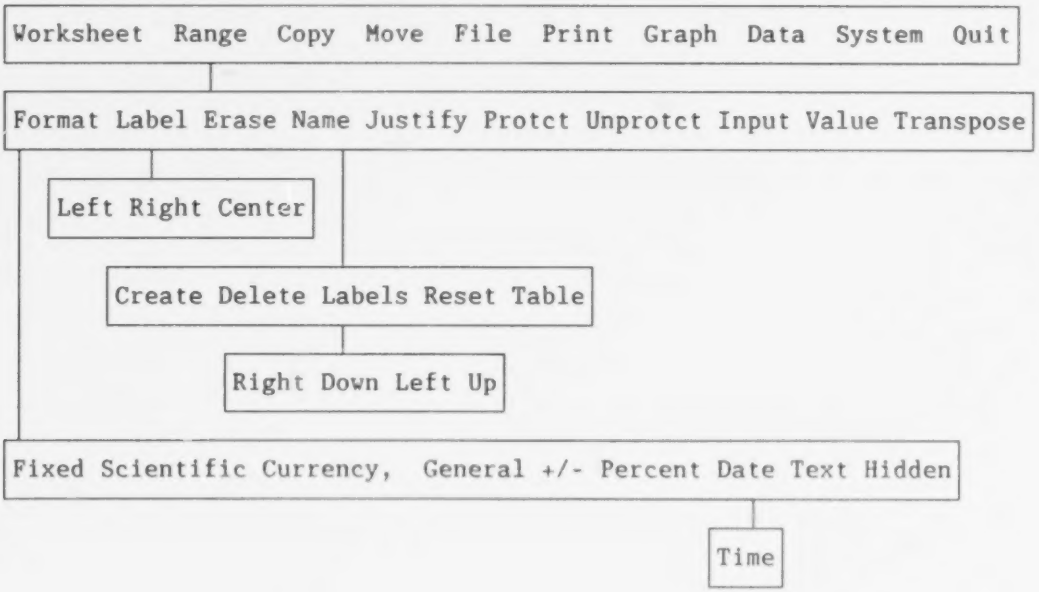
(5) Set the horizontal windowing feature to unsynchronized: _____

_____

(6) Clear the split titles from the worksheet: _____

From the command menu below, write the command to perform the following operations (6 pts. each):

RANGE COMMAND MENU


Worksheet Range Copy Move File Print Graph Data System Quit
Format Label Erase Name Justify Protct Unprotct Input Value Transpose
Left Right Center
Create Delete Labels Reset Table
Right Down Left Up
Fixed Scientific Currency, General +/- Percent Date Text Hidden
Time

Example: Name the range A5..A10 as FACTORS: /RNCFACTORSA5..A10

(7) Protecttherange A2..E3:_____

(8) Make the range C5..C16 an input range:_____

(9) Justify the range G10..I18:_____

(10) Create range names in the adjacent cells to the right of the range D5..D8:_____

TRUE OR FALSE

Mark each of the following as T (TRUE) or F (FALSE) in the space provided at the left of each statement (5 pts. each):

_____11. When you devise a formula in which its value indirectly depends upon itself, it is called a circular reference and 1-2-3 will display a CAPS indicator in the lower right-hand corner.

_____12. When using the /Worksheet Titles Horizontal, it is important to remember that all rows above, and including the row the pointer is on, will be frozen as titles.

_____13. When setting vertical titles, all columns to the left of the pointer will be frozen as titles.

_____14. When creating a vertical window, the first window will be created just left of the pointer and the pointer will be located at the right edge of the first window.

_____15. When creating a horizontal window, the top window will be created just above, and not including the pointer, and the pointer will be located at the top of the bottom window.

_____16. /Range Protect has no effect unless you have enabled global protection.

_____17. Range Names cannot be used in formulas.

_____18. A template is an empty worksheet with formulas.

UNIT TEST--Lesson 13

Name:_____ Date:_____

TRUE OR FALSE

Mark each of the following as either T (TRUE) or F (FALSE) in the space provided at the left of each statement (7 pts. each):

_____1. It is always a good idea to move the pointer to the cell which is at the beginning of the "From" range before initiating a /Copy or /Move command.

_____2. Only cell contents and not cell formats are copied when using the /Copy command.

_____3. When using the /Copy command to copy from a single cell to a range, the source will be a cell and the target will be a range.

_____4. When using the /Copy command to copy from a range to a range, the source will be a range, and the target will be a cell (the beginning of the target range).

_____5. A relative cell reference in a formula will not change and an absolute cell reference in a formula will change when using the /Copy command to copy a formula.

_____6. If you move data to an area of the worksheet that already contains data, 1-2-3 will automatically add rows or columns to insert the moved data so as to not disturb the data that is already there.

_____7. If you move a cell containing a formula, the formula stays the same using the /Move command.

_____8. If you move the contents of a cell to which a formula refers, 1-2-3 changes the formula to reflect the new cell location.

_____9. When using the /Range Transpose command, 1-2-3 does adjust relative cell addresses to refer to the same cells just as if using the /Move command.

_____10. If you transpose a range to a location whose cells already contain data, 1-2-3 replaces their contents with the transposed range. Formulas that depended on the previous contents of the "To" range will now refer to the transposed cell entries.

SHORT ANSWER

Write the /Copy or /Move or /Range Transpose command to perform the following operations (6 pts. each):

Example: Copy cell A4 to B4..G4: /CA4..A4<Return>B4..G4<Return>

(11) Copy the cell C5 to E5: _____

_____

(12) Move the cell A1 to A3: _____

_____

(13) Copy the range A6..A12 to E6: _____

_____

(14) Move the range A1..C10 to G1: _____

_____

(15) Transpose the range C3..G4 to H1: _____

_____

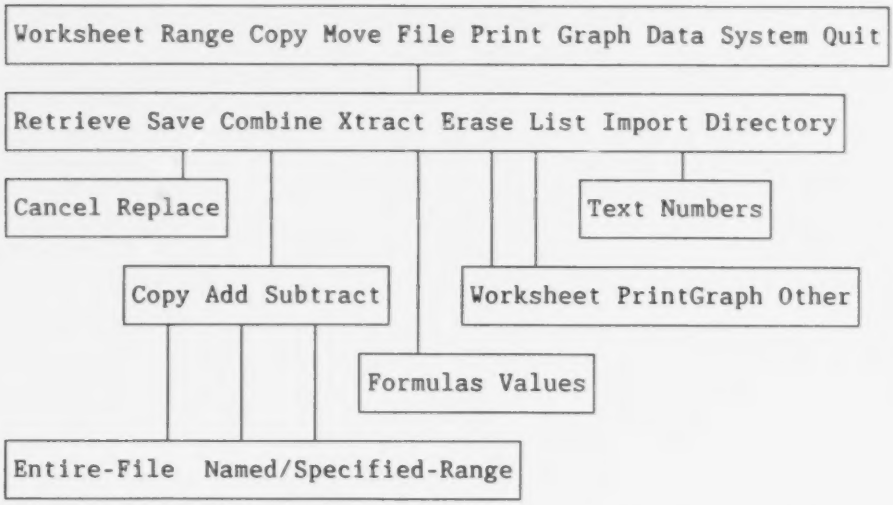
UNIT TEST--Lesson 14

Name: _____ Date: _____

SHORT ANSWER

From the command menu below, write the command to perform the following operations (5 pts. each):

FILE COMMAND MENU


Worksheet Range Copy Move File Print Graph Data System Quit
Retrieve Save Combine Xtract Erase List Import Directory
Cancel Replace
Text Numbers
Copy Add Subtract
Worksheet PrintGraph Other
Formulas Values
Entire-File Named/Specified-Range

Example: Import the file named INCOME by field: /FIINCOME<Return>

(1) Extract the range named AVERAGES and transfer formulas to the new file: _____

(2) Combine the range named VARIANCE and add it to the contents of the worksheet in memory: _____

(3) List all the worksheet files on the data disk: _____

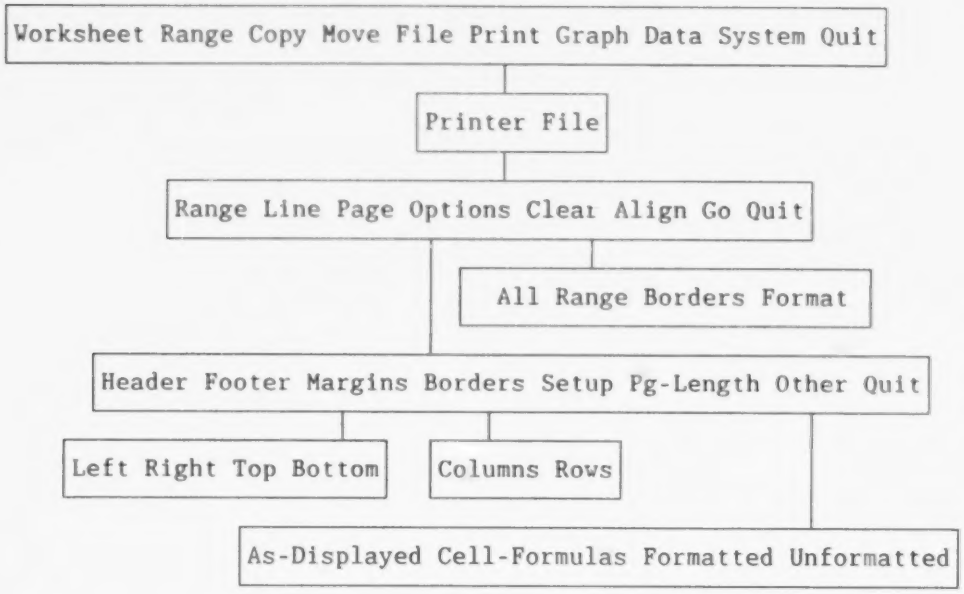
(4) Erase the worksheet file named AGEDIFF: _____

(5) Save the worksheet to a file named BUDANLS: _____

UNIT TEST--Lesson 14 Continued

From the command menu below, write the command to perform the following operations (5 pts. each):

PRINT COMMAND MENU


Worksheet Range Copy Move File Print Graph Data System Quit
Printer File
Range Line Page Options Clear Align Go Quit
All Range Borders Format
Header Footer Margins Borders Setup Pg-Length Other Quit
Left Right Top Bottom
Columns Rows
As-Displayed Cell-Formulas Formatted Unformatted

Example: Set the print range to A1..G10: /PPRA1..G10<Return>

(6) Set the printer setup character to 029: _____

(7) Set the top margin to 3 lines: _____

(8) Set the left margin to 140: _____

(9) Set the page length to 51: _____

(10) Set the worksheet command to print cell formulas: _____

(11) Clear all print settings to the default values: _____

(12) Export the worksheet to a file named SALESRPT.TXT: _____

TRUE OR FALSE

Mark each of the following as either T (TRUE) or F (FALSE) in the space provided at the left of each statement (5 pts. each):

_____13. When a file is retrieved from the disk, it is automatically appended to the end of the worksheet that is currently in memory.

_____14. If no extension is included on a File Save command, the extension .WK1 is automatically added by 1-2-3.

_____15. Extract means to remove part of a worksheet and store it in a file for use by another worksheet.

_____16. Combine mean to incorporate a file into a worksheet that is already in memory.

_____17. Import means to send data to a file in a form that can be used by other programs.

_____18. Export means to receive data to a 1-2-3 worksheet that has been created by another program.

_____19. You can send output directly to the printer or you can store it in a print file for printing later with 1-2-3 or for use with other programs.

____20. 1-2-3 automatically adds the extension .TXT to files that are "printed" to the data disk.

UNIT TEST--Lesson 15

Name:_____ Date:_____

MULTIPLE CHOICE

Answer the following by writing the letter of the best choice for each question in the space provided at the left of the question (10 pts. each):

_____ 1. If you wanted to select values from a simple list instead of a table, you could use the _____ command.
a. @VLOOKUP
b. @CHOOSE
c. @LIST
d. @HLOOKUP

_____ 2. In a table lookup, the term that refers to hov many rows or columns below or to the right of the comparison column of the comparison row or column is:
a. offset
b. test value
c. comparison value
d. range

_____ 3. In using table lookups the comparison values must be in which order:
a. increasing
b. decreasing
c. random
d. doesn't matter

_____ 4. The first column or row of a lookup table contains the:
a. offset value
b. table range
c. test value
d. comparison value

MATCHING

Match the function with the appropriate definition by writing the letter for the function in the blank to the left of the definition (5 pts. each):

_____ 5. Performs a vertical table lookup

_____ 6. Returns a not available value

_____ 7. Returns an error value

_____ 8. Performs a short table lookup

_____ 9. Performs a horizontal table lookup

a. @HLOOKUP
b. @ISERR
c. @ERR
d. @VLOOKUP
e. @NA
f. @IF
g. @CHOOSE

SHORT ANSWER

Using the following lookup tables, what is the result of the following functions (5 pts each):

	A	B	C	D	E	F	G	H
11	0	0		10	15	25	40	
12	1200	.01		2	4	6	8	
13	2000	.02		3	5	7	9	
14	5000	.03		4	8	12	16	
15	8000	.04		5	10	15	20	
16	12000	.05						
17	18000	.06						
18	25000	.07						
19	35000	.08						
20	50000	.09						
21								
22								

10. @VLOOKUP(15600,A11..B20,1) _____

11. @HLOOKUP(30,D11..G15,2) _____

12. @VLOOKUP(58500,A11..B20),1) _____

13. @HLOOKUP(18,D11..G15,3) _____

UNIT TEST--Lesson 16

Name:_____ Date:_____

MATCHING

Match each of the following macro key descriptions with the macro key command by placing the appropriate letter in the blank to the left of the descriptions (5 pts. each):

_____ 1.	Return or Enter key	a.	{bs}
		b.	{up}
_____ 2.	Page right key	c.	{home}
		d.	~
_____ 3.	Up arrow key	e.	{?}
		f.	{bigright}
_____ 4.	Backspace key		
_____ 5.	Pause for manual input		

Match each of the following macro programming command descriptions with the macro command by placing the appropriate letter in the blank to the left of the descriptions (5 pts. each):

_____ 6.	Allows comparisons to be made	a.	{BRANCH}
		b.	{QUIT}
_____ 7.	Causes macro execution to pass control to the cell identified by name	c.	{GETLABEL}
		d.	{IF}
		e.	{GETNUMBER}
_____ 8.	Pauses for a character string to be input from the keyboard	f.	{MENUBRANCH}
_____ 9.	Permits a worksheet to be operated by menu choices		
_____ 10.	Pauses for a number to be input from the keyboard		

TRUE OR FALSE

Mark each of the following as either T (TRUE) or F (FALSE) in the space provided at the left of each statement (5 pts. each):

_____ 11. A stored sequence of keystrokes is called a macro.

_____ 12. Macros may be attached to any key on the keyboard including number keys and special keys.

_____ 13. Macros are executed by holding down the [Ctrl] key and typing the letter to which the macro is attached.

_____ 14. You may interrupt macro execution by pressing the [Ctrl] and [Break] keys simultaneously.

_____ 15. The auto-execute macro is always stored with the name, \E.

_____ 16. Subroutines are identified by the name of the subroutine in braces {}.

_____ 17. Macros must be entered as label entries.

_____ 18. Each advanced macro command must begin with a left brace followed by a macro command keyword.

_____ 19. The instructions you type in a macro may include any of the standard keyboard characters as well as any of 1-2-3's special keys.

_____ 20. You may type as many macro keystrokes as you want in a single cell as long as it does not exceed 240 characters.

UNIT TESTS (12 - 14)

ADVANCED WORKSHEET AND RANGE COMMANDS--UNIT 12

Short Answer	True or False
1. /WGPE	11. False
2. /WGRM	12. False
3. /WTB	13. True
4. /WWH	14. True
5. /WWU	15. False
6. /WTC	16. True
7. /RPA2..E3<Return>	17. False
8. /RIC5..C16<Return>	18. True
9. /RJG10..I18<Return>	
10. /RNLRD5..D8<Return>	

ADVANCED COPY AND MOVED COMMANDS--UNIT 13

True or False	Short Answer
1. True	11. /CC5..C5<Return>E5..E5<Return>
2. False	12. /MA1..A1<Return>A3..A3<Return>
3. True	13. /CA6..A12<Return>E6..E6<Return>
4. True	14. /MA1..C10<Return>G1..G1<Return>
5. False	15. /RTC3..G4<Return>H1..H1<Return>
6. False	
7. True	
8. True	
9. False	
10. True	

ADVANCED FILE AND PRINT COMMANDS--UNIT 14

Short Answer	True or False
1. /FXFAVERAGES<Return>	13. False
2. /FCAVARIANCE<Return>	14. True
3. /FDW	15. True
4. /FEWAGEDIFF<Return>	16. True
5. /FSGUDANLS<Return>	17. False
6. /PPOS\029<Return>	18. False
7. /PPOMT3<Return>	19. True
8. /PPOML140<Return>	20. True
9. /PPOP51<Return>	
10. /PPOOC	
11. /PPCA	
12. /PFSALESRPT<Return>	

UNIT TESTS (15 - 16)

TABLE LOOKUP AND SPECIAL FUNCTIONS--UNIT 15

Multiple Choice	Matching	Short Answer
1. b	5. d	10. .05
2. a	6. e	11. 7
3. a	7. c	12. .09
4. d	8. g	13. 8
	9. a	

KEYBOARD MACROS--UNIT 16

Matching	True or False
1. d	11. True
2. f	12. False
3. b	13. True
4. a	14. True
5. e	15. False
6. d	16. True
7. a	17. True
8. c	18. True
9. f	19. True
10. e	20. True

EXERCISES (12-12)

ADVANCED WORKSHEET AND RANGE COMMANDS--UNIT 11

PAYMENT

Loan Payment Worksheet

Principal Amount:	10000
Interest Rate:	.0125
Number of Years:	8
Payment Amount:	$165.29

This worksheet will calculate a loan payment amount for any specified principal amount, interest rate, and term (number of payments). Enter any principal amount as any whole number--do not include commas or dollar signs. Enter the interest rate with the percent sign. For instance, 12.5% would be entered as 12.5%. The number of years should be entered as any whole number. After entering this data, press [Esc] to calculate the loan payment.

PRODANLS

PRODUCTIVITY ANALYSIS

AVERAGE KEYSTROKES PER DOCUMENT: 250

EMPLOYEE NAME	TOTAL DOCS	DIRECT HOURS	TOTAL KEYSTRKS	KEYSTRKS PER HOUR	KEYSTRKS PER MIN	DOCS PER MINUTE	% OF TOTAL
Miller,M.	2000	35	500000	14286	238	1	9%
Ripley,R.	1800	32	450000	14063	234	1	9%
Harvey,H.	2200	30	550000	18333	306	1	11%
Brown,B.	1900	20	475000	23750	396	2	15%
King,K.	1340	26	335000	12885	215	1	8%
Albert,A.	1560	28	390000	13929	232	1	9%
Edward,E.	1980	30	495000	16500	275	1	10%
Crown,C.	1600	24	400000	16667	278	1	10%
Darwin,D.	1750	34	437500	12868	214	1	8%
Geary,G.	1440	22	360000	16364	273	1	10%
TOTALS:	17570	281	4392500	159643	2661	11	100%
MAXIMUMS:	2200	35	550000	23750	396	2	15%
MINIMUMS:	1340	20	335000	12868	214	1	8%
AVERAGES:	1757	28	439250	15964	266	1	10%

ACCT01

Mulligan Engineering Company
Work Sheet
For Period Ending 12/31/86

ACCOUNT TITLE	C	TRIAL BALANCE Debit	TRIAL BALANCE Credit	ADJUSTMENTS Debit	ADJUSTMENTS Credit	INCOME STMT. Debit	INCOME STMT. Credit	BALANCE SHEET Debit	BALANCE SHEET Credit
CASH	2	2800.00			800.00			2000.00	
ACCT.REC.	2	4700.00						4700.00	
SUPPLIES	2	750.00			200.00			550.00	
PRE.RENT	2	2000.00			1000.00			1000.00	
EQUIPMENT	2	1600.00						1600.00	
AC.DEP-EQ	2		300.00		300.00				600.00
BUILDING	2	22000.00						22000.00	
AC.DEP-BL	2		4100.00		550.00				4650.00
NOTES PAY	2		5200.00						5200.00
ACCTS.PAY	2		2300.00						2300.00
SAL.PAY	2				450.00				450.00
CAPITAL	2		16600.00						16600.00
DRAWING	2			800.00				800.00	
FEES REV	1		8950.00				8950.00		
DEP.EX-EQ	1			300.00		300.00			
DEP.EX-BL	1			550.00		550.00			
ADVERTISE	1	200.00				200.00			
RENT	1			1000.00		1000.00			
SALARIES	1	2900.00		450.00		3350.00			
SUPPLIES	1			200.00		200.00			
UTILITIES	1	500.00				500.00			
TOTAL		37450.00	37450.00	3300.00	3300.00	6100.00	8950.00	32650.00	29800.00
NET INCOME						2850.00			2850.00
TOTAL						8950.00	8950.00	32650.00	32650.00

ACCT02

Larry Legal, Attorney-at-Law
Work Sheet
For Period Ending 01/31/86

ACCOUNT TITLE	C	TRIAL BALANCE Debit	TRIAL BALANCE Credit	ADJUSTMENTS Debit	ADJUSTMENTS Credit	INCOME STMT. Debit	INCOME STMT. Credit	BALANCE SHEET Debit	BALANCE SHEET Credit
CASH	2	2363.00			300.00			2063.00	
ACCT.REC.	2	1775.00						1775.00	
SUPPLIES	2	410.00			95.00			315.00	
PRE.RENT	2	1500.00			500.00			1000.00	
PRE.INS	2	1200.00			100.00			1100.00	
EQUIPMENT	2	1350.00						1350.00	
AC.DEP-EQ	2				55.00				55.00
NOTES PAY	2		700.00						700.00
ACCTS.PAY	2		210.00						210.00
SAL.PAY	2				465.00				465.00
CAPITAL	2		5750.00						5750.00
DRAWING	2			300.00				300.00	
FEES REV	1		2625.00				2625.00		
DEP.EX-EQ	1			55.00		55.00			
INSURANCE	1			100.00		100.00			
RENT	1			500.00		500.00			
SALARIES	1	520.00		465.00		985.00			
SUPPLIES	1			95.00		95.00			
UTILITIES	1	167.00				167.00			
TOTAL		9285.00	9285.00	1515.00	1515.00	1902.00	2625.00	7903.00	7180.00
NET INCOME						723.00			723.00
TOTAL						2625.00	2625.00	7903.00	7903.00

EXERCISES (13-13)

SALESUMM

DATA PRODUCTS, INC.
COMPARATIVE SALES SUMMARY, 1987-1988

ITEM	DESC.	QUANTITY SOLD 1988	QUANTITY SOLD 1987	INCREASE DECREASE	SALES AMOUNT 1988	SALES AMOUNT 1987	INCREASE DECREASE
104	BINDER,3 RING	301	100	201	575.24	191.00	384.24
171	ALBUMS	55	121	-66	560.92	1220.00	-659.08
325	CLAMP BINDERS	701	100	601	205.39	39.00	166.39
921	DEC CONNECTORS	918	150	768	2700.25	325.50	2374.75
820	DISK FILTER	65	121	-56	1770.19	3672.39	-1902.20
105	FICHE PANELS	608	120	488	1430.55	282.00	1148.55
130	FLEXIBLE DISK	77	151	-74	500.90	1063.80	-562.90
308	DISK HOLDER	401	100	301	390.00	97.00	293.00
292	FICHE MAILERS	203	60	143	1775.00	437.00	1338.00
607	MCA PORTA TAPE	305	60	245	1875.07	307.00	1568.07
215	FICHE PAGES	706	120	586	820.15	139.20	680.95
185	FLIP FILES	706	100	606	900.19	127.00	773.19
960	EXTERNAL CABLE	201	100	101	350.25	175.00	175.25
214	FICHE BINDERS	301	100	201	359.94	109.00	250.94
801	INTERNAL CABLE	653	120	533	150.00	25.20	124.80
300	MAG CARD PANE	902	100	802	300.00	33.00	267.00
568	MCA BINDERS	709	100	609	1333.11	188.00	1145.11
730	DEC RIBBON	809	100	709	1151.44	129.00	1022.44
310	MULTI-DISK RACK	603	100	503	640.55	106.00	534.55
574	CODING FORMS	70	121	-51	590.30	1302.72	-712.42
111	FICHE FILES	506	120	386	1200.00	280.40	919.60
127	INDEX CARDS	501	120	381	660.00	52.80	607.20
487	CONTROL BOARDS	81	151	-70	1804.29	3504.29	-1700.00
909	MYLAR TAPE	401	100	301	303.25	75.00	228.25
825	PAPER TAPE TRAY	512	50	462	1995.09	194.50	1800.59
590	PRINTOUT DESIGN	807	120	687	950.23	140.40	809.83
409	REFERENCE RACK	701	50	651	1950.80	139.00	1811.80
505	REPORT COVERS	401	150	251	407.45	151.00	256.45
181	TRAVEL CASE	912	150	762	1805.54	214.50	1591.04
TOTALS		14116	3155	10961	29456.09	14720.70	14735.39

One print should be sorted in numerical order by Item No.
One print should be sorted in alphabetical order by Description.
One print should have the three Sales Amount columns to the left of the three Quantity Sold columns.

EXERCISES (13-13)

STOCKINV

STOCK INVESTMENT SUMMARY

Company Name	No of Shares	Price Per Share	Total Price	Dvdnds Per Share	Total Dvdnds	Sell Price Share	Total Sell Price
CALICO INC.	150	10.00	1500.00	0.07	10.50	6.51	976.50
RIO-RITA FOODS	250	50.03	12507.50	5.20	1300.00	90.00	22500.00
ROBIN'S INN	150	25.00	3750.00	0.15	22.50	14.10	2115.00
FUTURE FOODS	100	50.00	5000.00	0.16	16.00	49.60	4960.00
HAM'S BURGERS	100	50.00	5000.00	0.45	45.00	63.00	6300.00
KEY'S SLIMRITE	50	10.08	504.00	3.00	150.00	64.00	3200.00
AMERICAN STORE	200	25.00	5000.00	0.16	32.00	25.60	5120.00
BURGER BUN	50	30.00	1500.00	0.80	40.00	40.00	2000.00
MICKEY'S INN	100	70.00	7000.00	0.88	88.00	72.16	7216.00
NUMART GROCERY	200	44.00	8800.00	0.30	60.00	43.50	8700.00
PEDRO'S TACOS	150	30.00	4500.00	0.08	12.00	29.60	4440.00
QUEEN'S MART	50	20.00	1000.00	0.06	3.00	24.50	1225.00
RUSSEL'S	50	50.00	2500.00	0.10	5.00	48.00	2400.00
SAM'S GROCERY	100	12.00	1200.00	1.25	125.00	21.25	2125.00
STEAK HOUSE	100	50.00	5000.00	0.09	9.00	49.60	4960.00
VITA VILLAGE	150	20.01	3001.50	0.30	45.00	5.00	750.00
SEA SUPPLIES	100	10.03	1003.00	1.50	150.00	90.00	9000.00
DON'S DRIVE IN	50	10.03	501.50	0.60	30.00	36.00	1800.00
FUNGUS FOODS	200	70.00	14000.00	0.09	18.00	72.90	14580.00
SIZZLER HUT	200	50.01	10002.00	2.00	400.00	60.00	12000.00
TOTAL	2500		93269.50		2561.00		116367.50

STOCKINV Continued

Company Name	Amount Gain Loss	Percent Gain Loss
CALICO INC.	-513.00	-34.2%
RIO-RITA FOODS	22500.00	90.3%
ROBIN'S INN	-1612.50	-43.0%
FUTURE FOODS	-24.00	-0.5%
HAM'S BURGERS	1345.00	26.9%
KEY'S SLIMRITE	2846.00	564.7%
AMERICAN STORE	152.00	3.0%
BURGER BUN	540.00	36.0%
MICKEY'S INN	304.00	4.3%
NUMART GROCERY	-40.00	-0.5%
PEDRO'S TACOS	-48.00	-1.1%
QUEEN'S MART	228.00	22.8%
RUSSEL'S	-95.00	-3.8%
SAM'S GROCERY	1050.00	87.5%
STEAK HOUSE	-31.00	-0.6%
VITA VILLAGE	-2206.50	-73.5%
SEA SUPPLIES	8147.00	812.3%
DON'S DRIVE IN	1328.50	264.9%
FUNGUS FOODS	598.00	4.3%
SIZZLER HUT	2398.00	24.0%
TOTAL	25659.00	27.5%

One print should be sorted in alphabetical order by Company Name.

EXERCISES (14-14)

INVENT

DAILY INVENTORY Jan. 1, 1988

Item Number	Reorder Qty	Cost/ Case	Cases Rec'd	Cases Sold	Cases On Hand	Total Cases	Total Cost	Reorder Time
100	15	6.35				0	0	YES
200	10	12.55				0	0	YES
300	35	12.75				0	0	YES
400	10	3.35				0	0	YES
500	20	8.75				0	0	YES
600	5	3.15				0	0	YES
700	25	9.55				0	0	YES
800	30	21.25				0	0	YES
900	20	25.75				0	0	YES
TOTAL COST							0	

DAILY INVENTORY Jan. 3, 1988

Item Number	Reorder Qty	Cost/ Case	Cases Rec'd	Cases Sold	Cases On Hand	Total Cases	Total Cost	Reorder Time
100	15	6.35	20	2		18	114.30	NO
200	10	12.55	12	8		4	50.20	YES
300	35	12.75	5	4		1	12.75	YES
400	10	3.35	20	5		15	50.25	NO
500	20	8.75	10	1		9	78.75	YES
600	5	3.15	3	1		2	6.30	YES
700	25	9.55	30	5		25	238.75	NO
800	30	21.25	30	9		11	446.25	YES
900	20	25.75	5	2		3	77.25	YES
TOTAL COST							1074.80	

INVENT Continued

DAILY INVENTORY Jan. 4, 1988

Item Number	Reorder Qty	Cost/ Case	Cases Rec'd	Cases Sold	Cases On Hand	Total Cases	Total Cost	Reorder Time
100	15	6.35		5	18	13	82.55	YES
200	10	12.55	10	8	4	6	75.30	YES
300	35	12.75	30	4	1	27	344.25	YES
400	10	3.35		10	15	5	16.75	YES
500	20	8.75	20		9	29	253.75	NO
600	5	3.15	25		2	27	85.05	NO
700	25	9.55		15	25	10	95.50	YES
800	30	21.25		10	11	1	21.25	YES
900	20	25.75	25		3	28	721.00	NO
TOTAL COST							1695.40	

DAILY INVENTORY Jan. 5, 1988

Item Number	Reorder Qty	Cost/ Case	Cases Rec'd	Cases Sold	Cases On Hand	Total Cases	Total Cost	Reorder Time
100	15	6.35			13	13	82.55	YES
200	10	12.55		5	6	1	12.55	YES
300	35	12.75	20		27	47	599.25	NO
400	10	3.35	10		5	15	50.25	NO
500	20	8.75		10	29	19	166.25	YES
600	5	3.15		6	27	21	66.15	NO
700	25	9.55	20		10	30	286.50	YES
800	30	21.25	40		1	41	871.25	NO
900	20	25.75		5	28	23	592.25	NO
TOTAL COST							2727.00	

BUDGET REDUCTION EXERCISE -- The student should complete the worksheet using their own discretion as to the projected budget. However, the New Budget Total should sum to $435,536. The worksheet should be contained in a memo stating justifications for the proposed budget reductions.

MICROS

CS 103 -- Microcomputer Applications
Instructor: Dr. Mike Michaels

Name	Student #	Assignments 1	2	3	4	Mid-term	Final	Total	Grade
Albert, U.	566-67-6216	7	15	8	5	64	120	219	A
Alexander, H.	550-61-0229	7	15	5		69	99	195	B
Arthur, B.	540-90-6114		15	4	8	57	78	162	D
Ashley, V.	544-66-7451	8	15	8	9	90	89	219	A
Biggers, C.	542-76-0819	7	15	6	12	49	74	163	D
Collins, R.	571-84-4978	10	14	10	11	54	115	214	A
Clark, M.	544-74-8717	3	15	7	8	81	102	216	A
Davis, A.	247-27-5245	9	15	4	6	80	99	213	A
Donaldson, B.	542-76-0826		15	6	9	83	67	180	C
Fredericks, B.	536-54-8483	7		9	10	44	95	165	C
Griffith, S.	574-58-4183	8	15	4	12	81	102	222	A
Grimley, E.	540-90-7043	10	15	6	7	69	65	172	C
Higgins, P.	566-67-7513	9	15	2	12	84	84	206	B
Howard, B.	568-67-7674	5	15	8	11	68	99	206	B
Ingrams, A.	555-84-6229	8	15	10	10	69	102	214	A
Jackson, D.	540-06-2981	5	15	8	5	69	78	180	C
Kidder, M.	541-76-0278	7	15	6	8	78	69	183	C
Larson, S.	540-80-0013	9	15	9	3	84	85	205	B
Madison, J.	542-52-7864	8	15	4	9	95	88	219	A
Marshall, S.	541-92-0594	8	15	10	12	84	66	195	B
Morrison, W.	543-74-5244	7	15	10	11	41	89	173	C
Mosley, E.	540-54-7906	10	15	7	8	63	95	198	B
Peters, D.	436-04-4322	8	15	9	9	78	103	222	A
Russell, S.	554-98-0069	8	15	4	6	85	116	234	A
Williams, S.	542-54-9599	8	15	6	12	89	96	226	A
	Minimum:	3	14	2	3	41	65	162	
	Maximum:	10	15	10	12	95	120	234	
	Average:	8	15	7	9	72	91	200	
	90% Curve:					86	108	211	
	80% Curve:					76	96	187	
	70% Curve:					67	84	164	
	60% Curve:					57	72	140	

Grade Column should be included only on Part 2 of the Case Study.

EXERCISES (15-15)

LAWSONS

Payroll Calculation and Register Worksheet for Week Ending: 05/15/85

EMPLOYEE NAME	0=Single 1=Married	NO.OF EXEMPT	HOURLY RATE	REGULAR HOURS	OVERTIME HOURS
Anderson, Scott	0	2	9.65	39.5	
Baker, Stephanie I.	1	0	7.50	36.0	
Carlson, Jeff R.	1	1	9.00	39.0	
Endicott, Douglas A.	1	4	10.35	40.0	3.0
Evans, Marcia L.	0	0	5.75	40.0	8.5
Gentry, Mary Beth	0	4	9.00	37.5	
Kensington, Terry	1	4	9.65	40.0	.5
Mantini, Maria	1	1	8.80	37.5	
Nelson, Joan	1	2	4.20	40.0	6.5
Ramirez, Antonio S.	0	1	6.40	40.0	4.5
Sanders, Nick C.	1	6	8.80	40.0	2.5
Tully, Donald	0	0	4.50	39.5	
Ulrich, Pat K.	1	2	4.50	40.0	2.5
Wong, Harold E.	1	3	7.50	39.0	
Yamamoto, Tamiro	1	3	7.80	38.5	
TOTALS				586.5	28.0

	GROSS PAY	FEDERAL W/H	STATE W/H	FICA	NET PAY
Anderson, Scott	381.18	85.68	35.85	29.54	230.11
Baker, Stephanie I.	270.00	45.90	18.90	20.93	184.28
Carlson, Jeff R.	351.00	56.40	27.17	27.20	240.22
Endicott, Douglas A.	460.58	84.40	33.22	35.69	307.26
Evans, Marcia L.	303.31	75.83	30.33	23.51	173.65
Gentry, Mary Beth	337.50	65.14	29.21	26.16	216.99
Kensington, Terry	393.24	69.59	27.83	30.48	265.34
Mantini, Maria	330.00	52.83	25.49	25.58	226.10
Nelson, Joan	208.95	28.98	9.31	16.19	154.46
Ramirez, Antonio S.	299.20	69.99	28.79	23.19	177.23
Sanders, Nick C.	385.00	59.32	25.35	29.84	270.49
Tully, Donald	177.75	26.66	10.67	13.78	126.65
Ulrich, Pat K.	196.88	26.93	6.97	15.26	147.72
Wong, Harold E.	292.50	39.92	20.68	22.67	209.24
Yamamoto, Tamiro	300.30	41.24	21.30	23.27	214.48
TOTALS	4687.38	828.82	351.06	363.27	3144.22

EXERCISES (16-16)

(1) \Y
```
{GOTO}A1~
JAN{RIGHT}FEB{RIGHT}MAR{RIGHT}~
APR{RIGHT}MAY{RIGHT}JUN{RIGHT}~
JUL{RIGHT}
```

\P
```
/PPR{?}~OS{?}~QAGQ
```

or

```
/PPRP1~OS\015~QAGQ
```

\D
```
{GOTO}A1~
@INT(@NOW)~
/WC12~
/RFA1..A1D1~
```

(2) \I
```
/FXVTOTCASES~
{GOTO}F6~
/FCCETOTCASES~
/RERECDSOLD~
/{?}~
/PPR{?}~OS{?}~QAGQ
```